The Iron Age

A Review of the Hardware and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 10 Warren Street, New York.

Vol. XVI: No. 16. *New York, Thursday, October 14, 1875.* *$4·50 a Year, Including Postage. Single Copies, Ten Cents.*

The Evans Repeating Rifle.

We show in the accompanying illustrations a new repeating rifle, manufactured by the Evans Repeating Rifle Co., for whom Messrs. Merwin, Hulbert & Co., No. 83 Chambers street and 63 Reade street, N. Y., are agents. As will be seen from the sectional cut marked Fig. 1, the Evans rifle is a magazine gun carrying a large number of cartridges, so placed as to be protected from accident. These cartridges are so disposed in the stock as to maintain a perfect balance of the piece when in position for shooting. The barrel of the gun, being unincumbered, is light, while the stock, though carrying the added weight of 34 rounds of 44-100 calibre central free cartridges, is not distorted or made clumsy, but still retains a neat appearance and a shape which fits it well to the shoulder. The size of the cartridge is shown in Fig. 3. As each cartridge is carried in a chamber by itself, the reserve ammunition is perfectly protected against any shock which can explode it. The movement of the lever, which is shown thrown forward in Fig. 1 and closed in Fig. 2, carries a cartridge forward and drops it into position, simultaneously ejecting the exploded shell. The gun can be used as an ordinary breech loader, if desired, or the whole round of 34 cartridges may be discharged by an expert in the use of the piece in 20 seconds.

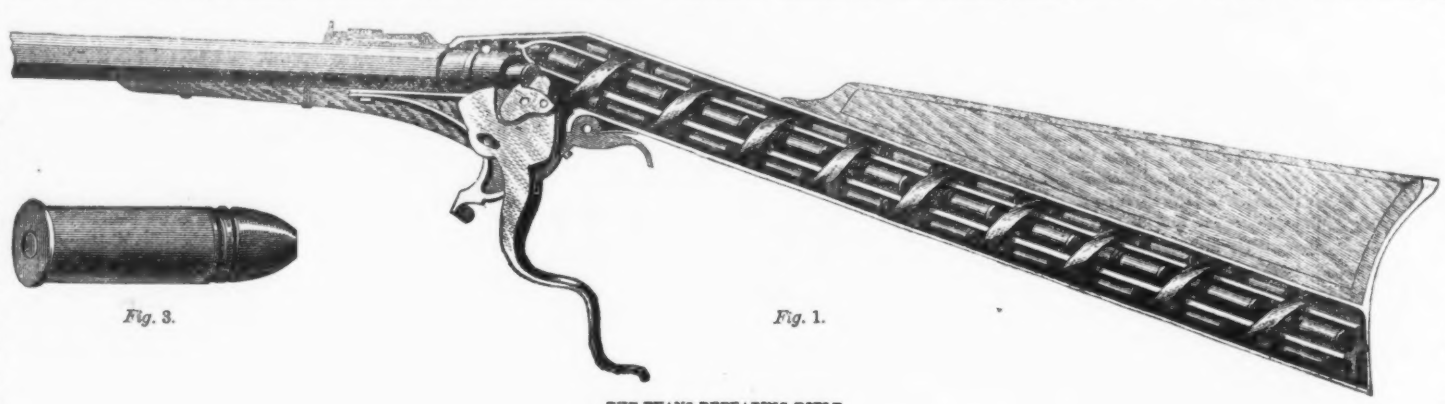


Fig. 3.

Fig. 1.

THE EVANS REPEATING RIFLE.

The working parts of the rifle consist of only seven pieces, all of which are simple and strong. There are no spiral springs or delicate parts used in its construction, and the arm is not likely to become deranged. The weight of ammunition carried diminishes the recoil materially, which is a consideration of importance.

Breech loading rifles have almost totally displaced the old-fashioned muzzle loaders, and now the tendency of riflemen is to demand a magazine gun, which renders it unnecessary to handle a greasy cartridge every time the gun is discharged, and also enables them to shoot with so much greater rapidity. This increase of rapidity in firing is of the greatest importance, as it often enables the sportsman to get several shots at game which otherwise he would lose if he failed to disable it at the first fire. Thus a good repeating rifle adds materially to the success of the sportsman.

A personal use of this gun in the woods for several weeks enables us to speak with confidence of its practical working. During that time it was severely tested; was often wet, but was always in good order for use. It has the important advantage of carrying twice as many cartridges as any other magazine gun in the market.

Price's Patent Retort Furnace.*

BY MR. I. LOWTHIAN BELL, M. P., F. R. S., MIDDLESBROUGH.

The ordinary reverberatory furnaces as employed for melting and puddling pig iron, or heating piles for the rolling mill, consist of a fire place, a hearth for the reception of the material under treatment, and a chimney for securing the necessary current of air through the fuel. All the operations in an iron works, with the exception of raising steam, require for their performance a very elevated temperature. Only that region, therefore, immediately adjoining the source of heat is available for any of the above-mentioned purposes; because, by the time we reach a distance of a few feet from the fire place, the flame is cooled down below that point to which it is sought to raise the contents of the furnace. The waste of heat, therefore, in every simple furnace, as described, is enormous, and various attempts have been made to reduce the amount of this loss. In former times, chambers between the hearth proper and the chimney were constructed, in which the iron received its first portions of heat. The extent, under any circumstances, to which this system is applicable in an iron works is but limited, indeed, practically, it was confined to the puddling process. Now, however, since the preliminary operation of refining has, generally speaking, been abandoned, this mode of economizing fuel has fallen into disuse.

In more recent times a considerable portion of the heat, which otherwise escaped into the chimney, has been intercepted by employing it as a means of raising steam. This application is sound in principle, because so far as a mere question of heat is concerned, there is no reason why the products of combustion might not be cooled down to 500 or 600 deg. Fah., at which temperature a maximum intensity of draught is commanded.

When, however, the gaseous contents of the chimney have their temperature reduced to 1200 or 1500 deg. Fah., the rate at which they impart heat to another body is so slow that there is no commercial advantage in preventing the loss inseparable from their escape, and even then the magnitude of the boiler arrangement is largely increased, compared with that when the fuel is applied direct for generating steam. An important mode of rendering available a portion of the heat, which otherwise is carried off unutilized, is obtained by the so-called regenerative furnace. In it the fuel is employed in the gaseous condition, so that both the combustible and the air required for its combustion have their temperature raised, and, in this way, heat which would be lost is intercepted and returned to the point where it can be usefully employed. Compared with the ordinary reverberatory furnace, an economy of from 20 to 30 per cent. in the fuel consumed is stated to be effected by the regenerative system.

In the common furnace, the volatilization of the hydro-carbons in the fire place is not only the cause of the expenditure of a certain quantity of heat, but the absorption of this heat tends to impose a limit to the power of the apparatus. The cooling effect, due to the evaporation of the volatile constituents of the coal, is augmented by the periodical introduction of the cold fuel, which is accompanied by the influx of a large volume of cold air. The result is a very prejudical effect, both in respect to the economy of combustible and intensity of temperature. From this convenience, the continuous action and previous heating of fuel and air exempts the regenerative furnace. The preliminary conversion, however, of the coal into a gas is attended with a certain amount of loss, inasmuch as the whole of the fixed carbon is burnt to the condition of carbonic oxide, which means a sacrifice of about 30 per cent. of its heating power. To this has to be added the cost of plant for doing this, and for heating the gasified fuel and air.

Mr. John Price, of Sunderland, has contrived a form of apparatus which he distinguishes by the name of the retort furnace. In it Mr. Price raises the temperature of the air, as well as that of the gaseous and fixed constituents of the coal, by the waste heat before it enters the chimney. It is true he cannot compete with the furnace known as the Siemens, in the matter of intensity of temperature to which the substances employed as the source of heat are brought, but Mr. Price avoids the loss which takes place in the gas producers of the so-called regenerative furnace. Whether the retort furnace can, or cannot, be applied to the manufacture of steel by the open hearth process remains to be proved; in the meantime it is interesting to know that 26 lbs. of wrought iron have been completely melted in a crucible by means of one of these furnaces. The drawing is a longitudinal section through center of furnace; A is a combustible chamber filled with grate bars in the ordinary way. B, a heating chamber, separated from A by the usual bridge. C is the neck descending into an underground flue D, leading into an up-cast or retort chamber, as it has been designated, E. In the center of the chamber E is a fire brick circular pillar F, with spaces around, and on which is placed a cast iron cylindrical air vessel G, which is protected by fire brick. On this air vessel G is built a retort H, partly of fire brick, partly of cast iron. The top of the cast iron part of the retort is fitted with a hopper I, in the throat of which is a damper, worked by a rocking shaft and lever from the ground. The lower portion of the retort, made of fire brick, has two necks, one L, leading to the combustion chamber for the passage of fuel, the other to the outside of the furnace for the insertion of stoking tools, to force the fuel forward into the combustion chamber. The entrance of the outer neck is closed by an air-tight door M. The up-cast or retort chamber E extends to near the top of the retort, where it is closed by brickwork, but is opened at the side by the flue N leading to the stack. Near the bottom of the chamber E, and in a line with a center of the circular air vessel G, are pipes P P, inserted in the walls of the chamber E, passing all round the chamber. These pipes are connected with the blast and pass into the central chamber G, as shown.

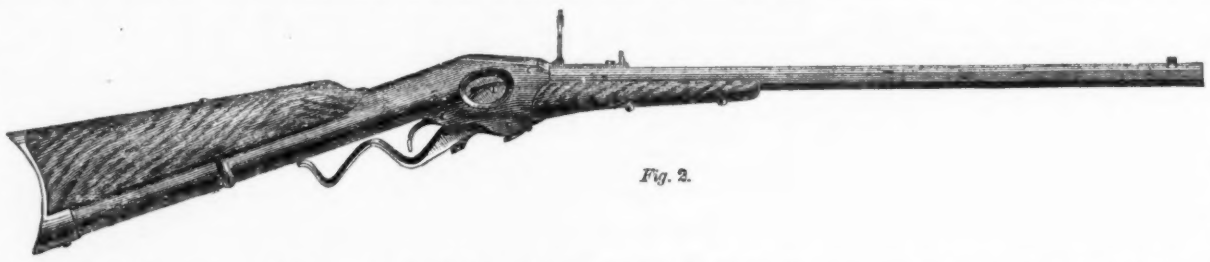
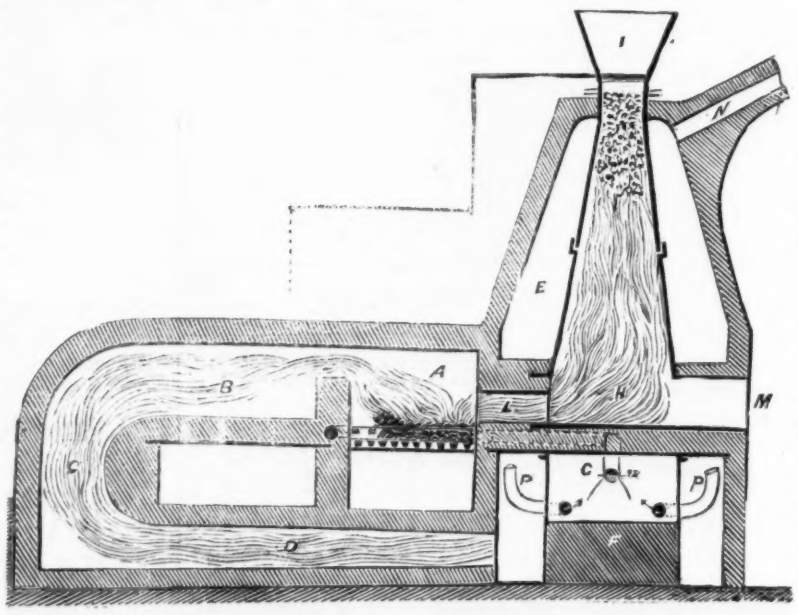


Fig. 2.

The practice in working is to light a fire on the grate bars, and generate heat in the usual manner, until the furnace is well heated.



PRICE'S PATENT RETORT FURNACE.

The retort is then filled with fuel, and the firing commences from the retort, and by the time the fuel at the top descends to the bottom of the retort, it is well heated, and a continuous supply of heated fuel is then kept up. All raw fuel is from this time supplied to the hopper I, only let into the "retort" by the damper without the access of air. The gases so generated in the combustion chamber pass over the bridge into heating chamber down the neck, into the underground flue, into the upcast or "retort" chamber, filling the spaces around, and giving up their heat to the circular air chamber, the retort and the air pipes and their residue passing off by way of the flue into the stack, the heat so stored being carried back into the furnace by the heated fuel. Combustion is supported by air under pressure from a fan. The air entering traverses the entire circuit of pipes, passing into the central air vessel out through the outlet into the ashpit, and so up through the grate bars. It will thus be seen, from the description just given, that to some degree the retort furnace embraces, in principle, that of the regenerative system; at the same time that the regenerative chambers, as well as the arrangement of valves for changing the direction of the current of the gases, are dispensed with.

According to a return furnished to me, a single bedded puddling furnace, working 12½ tons of pig iron per week, gave the following results:

	T.	C.	Q.	L.	T.	C.	Q.	L.
Pig iron delivered.....	188	15	0	0				
Scrap iron delivered..	31	4	0	0				
					219	19	0	0
Fettling used.....					49	17	1	10
Coal.....					149	0	0	20
Received puddled bars	184	1	2	15				
Received scrap iron...	28	7	3	15				
					212	9	2	2

CONSUMPTION PER TON OF PUDDLED IRON AND SCRAP BALLS.

Pig and scrap iron.....	27·70 cwts.
Fettling;.....	·46 "
Coal	14·07 "

In the case of a double bedded puddling furnace working 25 tons of pig iron per week, I have received the following figures:

Pig iron delivered.
603 tons.
Scrap iron delivered.
82 tons 11 cwt.
Total delivered.
685 tons 11 cwts.
Fettling used.
70 tons 1 qr. 9 lb.
Coal used.
350 tons 3 qr. 8 lbs.
Received puddled bars.
578 tons 14 cwt. 2 qr. 10 lbs.
Received scrap balls.
75 tons 1 qr. 15 lbs.
Total received.
653 tons 14 cwt. 3 qr. 25 lbs.

CONSUMPTION PER TON OF PUDDLED IRON AND SCRAP IRON.

Pig and scrap iron.....	20·97 cwts.
Fettling	·23 "
Coal.....	10·71 "

In both the trials of which particulars have just been given, the furnace was worked by the draught of the chimney, and the air entered the fire-place at the temperature of the atmosphere. In the following experiment a fan was used, and the air was propelled through heated pipes, by which its temperature, before entering the fire-place, was heated to 300° Fah. The furnace was of the double bedded description, and the work performed was 26½ tons of pig puddled in 10 shifts, instead of 25 tons when using cold air:

	T.	C.	Q.	L.	T.	C.	Q.	L.
Pig iron delivered.....	26	5	0	0				
Scrap iron "	3	4	0	0				
					29	9	0	0
Fettling "					5	5	3	22
Coal.....					13	5	0	24
Received puddled bars....	24	19	1	12				
" scrap balls.....	3	0	0	0				
					27	19	1	12

CONSUMPTION PER TON OF PUDDLED IRON AND SCRAP BALLS.

Pig and scrap iron.....	21·00 cwt.
Fettling.....	·38 "
Coal.....	9·44 "

When the retort system was applied to a reheating furnace using hot air, the consumption of coal was as follows:

Cinder Bottom.	Cwt. Per Ton.
Day shift only, including lighting up.....	5·25
Working day and night.....	4·25
Sand Bottom.	
Day shift only, including lighting up.....	4·50
Working day and night.....	3·75

In the ordinary furnace, the coal consumed amounted to 9½ cwt. per ton of iron, working day shift only, and 8 cwt. when going on uninterruptedly, so that the saving of fuel appears to be about one-third in puddling, and one half in reheating iron.

From the examinations which were made of the escaping gases, it would appear that the nature of the combustion is capable of being controlled, and, in this manner, a flame of a more or less reducing character can be maintained. In one case, two piles of iron were placed in a reheating furnace, which, from their size, projected above the bridge, where they were exposed to the cutting action of the flame. To avoid waste from this cause, the blast was moderated to about half its usual volume, the effect of which was manifested in the nature of the escaping gases, which had the following composition:

Car. oxide.	13·07 vols.,	or	13·39 by w't
Car. acid..	7·76 "	"	12·49 "
Hydrogen.	7·35 "	"	·53 "
Nitrogen..	71·82 "	"	73·59 "
	100·00		100·00

The air was heated to 500° Fah., and the gases as they entered the chimney 1500°, as ascertained approximately by a pyrometer, the flue itself being visibly red hot. This elevation in the temperature in the flue is probably due to the presence of so much unburnt inflammable matter in the gases, which would continue to burn on its way to the point of exit.

In the next experiment, the object sought to be obtained was the intensity of the temperature within command by this form of furnace, hence the full equivalent of air, heated to 550° Fah., was employed; indeed, the analysis of the sample of gases extending over three-quarters of an hour shows an excess of oxygen. Their composition was:

Carbonic acid.....	15·9 vol.,	or	22·8
Oxygen.....	2·2 "	"	2·3
Nitrogen...	81·9 "	"	74·9
	100·0		100·0

The elevated temperature afforded by the apparatus at the period when the gases had the composition just described may be judged of by the fact that 26½ tons of malleable iron was perfectly fused in 2½ hours. The escaping gases, notwithstanding the intense heat of the hearth, only indicated 900° Fah., the flue itself not being visibly red hot. Taking the heat evolved by the combustion of coal to be 8000 units per unit of the fuel, that which escapes up the chimney in the gases at 900° Fah. may be roughly estimated at 15 per cent. of the whole. The loss from a furnace of the ordinary construction would, at the high temperature at which the products of combustion enter the chimney, be difficult to calculate, but at anything like 3000° Fah., it would not be far from one-half of the heat the coal is capable of affording. The advantage, therefore, of intercepting the difference between 50 and 15 per cent., and of returning even a portion of it, so that it may be usefully applied, is obvious. That a notable amount of effective power which would be otherwise lost is so returned, is apparent from the figures, giving the consumption of coal, which have been furnished to me. A word or two with regard to cost of construction and of maintenance, which constitute important items of consideration in questions such as that we are discussing. Mr. Wm. Price informs me that the retort furnace for puddling can be erected at something like half the price of one made according to the plan commonly in use, the power of production being the same in each case.

In the matter of repairs, his experience does not extend over a sufficiently long period to enable him to speak with precision. So far, however, as he can form an opinion, he thinks that the cost of maintenance is less, and that the retort furnace is more durable than the old kind formerly used. The retorts themselves promise, from present appearances, to last 12 months, in which case their renewal will amount to 3d. per ton on the iron puddled, and 1½d. on iron reheated. In conclusion, I may state that several of Mr. Price's furnaces are, and for some time have been, in operation at the Government Works, at Woolwich. I am indebted for the particulars contained in this communication to the courtesy of the officers of that establishment. The analysis of the gases given were performed in the Royal Laboratory of the ordnance department.

*Iron and Steel Institute.

The Cleveland Iron Company have discharged their puddlers.

Metals.

ANSONIA

BRASS & COPPER CO.

19 and 21 Cliff Street,

(Adjoining Office of Phelps, Dodge & Co.)

Sheet Brass, Planished Brass, Polished Brass Door Rails, Brass Wire, Hayden's Patent Brass Kettles, Brass Tubing, Lamp Burners, Gas Burners,

Sheet Copper, Planished Copper, Copper Rivets & Burs, Braziers' & Bolt Copper, Braziers' Rivets, Copper Tubing, Copper Bottoms, Copper Wire, Iron Wire, Fence Wire.

A large variety of Wood and Bronze Case Clocks.

MANUFACTORIES AT ANSONIA, CONN.

Phelps, Dodge & Co.,

IMPORTERS OF

TIN PLATE,

Sheet Iron, Copper, Pig Tin, Wire, Zinc, etc.

MANUFACTURERS OF

COPPER and BRASS.

19 Cliff St., bet. John and Fulton,

NEW YORK.

A. A. THOMSON & CO.

Importers and Dealers in

Tin Plate, Sheet Iron,

ZINC, COPPER, WIRE,

Block Tin Spelter, Solder, &c.

Nos. 213 and 215 Water and 119 Beekman Sts.,

NEW YORK.

P. O. Box, 61.

T. B. CODDINGTON & CO.,

25 & 27 Cliff St., New York.

Importers of

TIN PLATES,

And METALS of all descriptions.

N. L. CORT & CO.,

Importers and Dealers in

Tin Plate, Pig Tin,

SHEET IRON, SOLDER, ZINC, &c., &c.

220 & 222 Water and 115 & 117 Beekman Streets,

N. L. CORT, C. P. CORT. NEW YORK.

SCOVILL MFG. CO.,

419 & 421 Broome St., New York.

MANUFACTURERS OF

SHEET AND ROLL BRASS,
BRASS AND COPPER WIRE,
GERMAN SILVER, BRASS BUTT HINGES,
KEROSENE BURNERS.
METAL BLANKS CUT TO ORDER.
CLOTH AND METAL BUTTONS, in every variety.

PHOTOGRAPHIC GOODS.

MANUFACTORIES:

Waterbury, Conn.,
New Haven, Conn.,
New York City.

EVANS & ASKIN

BIRMINGHAM ENGLAND,

Refiners of Nickel and Cobalt.

SOLE AGENTS,

VAN WART & McCOY,

134 & 136 Duane Street, N. Y.

Nickel and Cobalt always in stock.

E. A. Williams & Son.

BRASS & BELL FOUNDRY

No. 107 Plymouth Street,

Bet. Washington & Warren Sts., Jersey City, N. J.

Anti Friction Metals

Metals.

Waterbury Brass Co.

CAPITAL, - - $400,000.

JOHN SHERMAN, Agent,

No. 52 Beekman Street, NEW YORK.

Mills at WATERBURY, CONN.

Sheet, Rolled and Platers' Brass,

GERMAN SILVER,

Copper, Brass and German Silver Wire,

BRASS AND COPPER TUBING,

COPPER RIVETS & BURS,

BRASS KETTLES,

WASH BASINS,

Door Rail, Brass Tags & Step Plates.

PERCUSSION CAPS,

POWDER FLASKS,

Metallic Eylets,

Shot Pouches,

Tape Measures, etc.

Manhattan Brass Co.,

Manufacturers of

Sheet Brass, Brass Wire, Copper Wire, Copper Rivets, Brass Tubing, Spelter Tubing, Satchel Frames,

Olmsted Patent Oilers, Prior Patent Oilers, Broughton Patent Oilers, Brass, Tin & Zinc Oilers, Hurricane Lanterns, Baby Carriage Hardware, Stationers' Hardware,

BROWN'S PATENT PICTURE NAIL,

Pat. July 6th, 1875.

Agents for Hartford Eyelet Co.

Office, 83 Reade cor. Church Sts., N. Y.

Works, 1st. Ave. 27th to 28th Sts., N. Y.

J. H. WHITE, President. H. L. COE, Secretary.
STEPHEN A. MIDDLEBROOK, Treasurer.

Holmes, Booth & Haydens,

49 Chambers Street, N. Y.

ESTABLISHED 1853.

CAPITAL, - - $400,000.

Manufacturers of all kinds of

Brass, Copper & German Silver,

ROLLED AND IN SHEETS.

BRASS & COPPER WIRE,

Tubing, Copper Rivets & Burs.

BRASS & IRON

JACK CHAIN, DOOR RAIL.

German Silver Spoons,

SILVER PLATED FORKS & SPOONS,

Kerosene Burners, &c.

Works at Waterbury, Conn.

BALTIMORE

COPPER WORKS.

POPE, COLE & CO.,

Are now Purchasing

Copper Ores

and smelting and refining at these works, where, with experienced workmen and unusual facilities, we are turning out **Ingot** and **Cake Copper** of unequalled purity and toughness.

We are prepared to buy Ores, Matte, Regulus and other furnace material, in any quantities.

Office, 57 South Gay St., Baltimore Md.
Works at Canton,

A. HARNICKELL,

22 Cliff Street, New York,

Offers from store

Baltimore Ingot Copper,

Lake Copper, Braziers Sheets, &c.

Old Copper bought.

JOHN W. QUINCY,

98 William Street, New York.

NICKEL.

Pig Iron, Lead, Block Tin, and other Foundry Metals. Cut Nails.

Philadelphia Nickel Plating Works.

John Hartman,

37 1-2 North Seventh Street, Philadelphia.

Electro-Nickel Plating

Metallic Articles finished in the best manner.

Fuller, Dana & Fitz,

METAL MERCHANTS.

Importers of Tin Plates, Pig Tin, Russia Sheet Iron, Swedish Iron, Etc.

110 North St., BOSTON.

Metals.

The Plume & Atwood Mfg. Company,

MANUFACTURERS OF

SHEET and ROLL BRASS and WIRE,

German Silver and Gilding Metal,

Copper Rivets and Burs,

Kerosene Burners,

Shoe Eyelets, Lamp Trimmings, &c.

80 Chambers Street, New York.

13 Federal Street, Boston.

Rolling Mill, THOMASTON, Ct. | Factories, WATERBURY, Ct.

JOHN DAVOL & SONS,

Agents for

Brooklyn Brass and Copper Co.,

Dealers in

Ingot Copper, Spelter, Lead, Tin, Antimony, Solder & Old Metals.

100 John Street, N. Y.

W. J. HAMMOND,

Dealer in all kinds of

BRASS, COPPER,

Cast Iron, Wrought Iron,

AND STEEL SCRAP. *Cor. Eleventh St. and Duquesne Way, Pittsburgh, Pa.*

Bailey, Farrell & Co

BRASS FINISHERS

and

FOUNDERS.

Brass Work

FOR

Plumbers, Gas and Steam Fitters.

ENGINE BUILDERS.

Pittsburgh, - - Pa.

New Catalogue packed with first order or mailed on receipt of eight stamps.

EDWARD MILLER & CO.,

Manufacturers of

SHEET BRASS,

Brass Kettles; Lanterns

OILERS, KETTLE EARS,

Spouts, Tinmens' Trimmings, Kerosene Lamps, Burners, Trimmings, &c.

4 Warren Street, New York.

Mill and Factories, Meriden, Conn.

The Wilmot Mfg. Co.,

96 John St., Bridgeport, Conn.

Manufacturers of

KEROSENE BURNERS AND LAMP TRIMMINGS, Etc.

We invite your attention to our extensive facilities for manufacturing articles of utility, novelty, or embellishment, and assure you of our ability to meet the requirements of every branch of trade. The increasing demand upon us has made it necessary to extend our works, and we now occupy the entire premises, No. 99 John Street, and our facilities for the production of Light Metallic Goods, in Copper, Brass or other Sheet Metals, are unsurpassed. The use of the most approved machinery and appliances, our long experience and established reputation in this branch of manufacture, encourage us to solicit still more extended relations with those who require work of this class, and we take this method of calling your attention to our establishment.

Wire, etc.

BRIDGEPORT BRASS CO.,

62 John Street, New York, Manufacturers of

Brass Door Rail, Copper Rivets and Burs, Lightning Rod Copper, Sun Burner Shades & Rings, Lamp Collars and Sockets, Kerosene Oil Burners, Brass Hinges,

Brass Student Lamps, &c., &c.

Sun Burners, Brass Tubing, Brass and Copper Wire, Copper Bottoms, Brass and Tinned Rivets, Brass and Tinned Oilers, Tin Tobacco Boxes, Farmers' Lanterns,

ORDERS SOLICITED FOR SHEET BRASS. *Manufactured at Bridgeport, Conn.*

The above cut represents our new **Marcy Lantern**, so that its advantages over others in market can readily be seen. With a tempered steel elliptic spring operating directly on the top, it can readily be adjusted and is firmly locked in its place. No sudden pressure on the guards or frame will displace the Globe; the Frame, Ball and Lock being all connected, there are no small parts to get lost or worn out. Arrangements complete for burning Kerosene, Candle and Oil.

Wire, etc.

National Wire and Lantern Works.

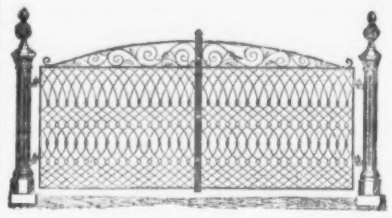
Warehouse, 45 Fulton Street, New York.

HOWARD & MORSE,

MANUFACTURERS OF

BRASS, COPPER AND IRON

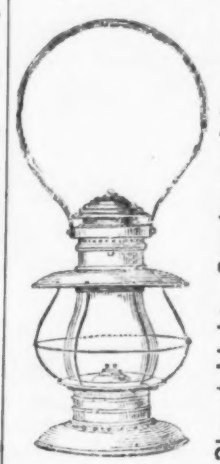
WIRE CLOTH,



LOCOMOTIVE SPARK WIRE CLOTH,

Iron Wire Bolting Cloth,

Ship and Railroad Lanterns,



Signal Lights, Conductors' Lanterns

ADJUSTABLE GLOBE HAND LANTERN,

DESK AND OFFICE RAILING

Riddles, Coal and Sand Screens,

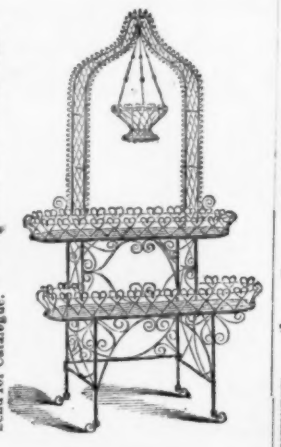
NURSERY FENDERS & SPARK GUARDS,

Ornamental Wire Fence.

IMPROVED WIRE

Flower Pot Stands,

Wire Counter Railing, Wire Fencing, Steel Wire Casting Brushes, Weather Vanes, Stable Furniture, Bird Cages, Iron and Brass Wire Cloth, Twilled and Spark Wire Cloth, &c. Manufactured by E. T. BARNUM, Detroit, Mich. Send for Catalogue.



Geo. W. Prentiss & Co.,

HOLYOKE, MASS.,

MANUFACTURERS OF

IRON WIRE.

Bright, Coppered, Annealed and Tin Plated. Also **GUN SCREW WIRE**

Of all sizes straightened and cut to order.

Cleveland Wire Works,

W. S. TYLER,

Office & Works, 754 & 758 St. Clair St., Cleveland, O.

Manufacturer of Steel, Copper, Brass and Iron Wire Cloth, Steel Locomotive Cloth, Steel Smut and Mill Screen Cloth, Steel Coal and Sand Screens, Steel and Brass Foundry Riddles, Wire Office Railing and Fencing, Ornamental Wire Work, Steel and Tinned Flour Selves, &c.

Wire, etc.

Washburn & Moen Mfg. Company

WORCESTER, MASS.

Established 1831.

PHILIP L. MOEN, President and Treasurer.
CHAS. F. WASHBURN, Sec'y.

MANUFACTURERS OF

IRON AND STEEL WIRE.

WIRE RODS of all Grades; Round Iron, Rivet quality, 3-16 in. to ½ in., cut to any length.

Owners and exclusive Operators of the

PATENT CONTINUOUS MILL,

Producing Iron and Steel WIRE, in coils of 100 pounds, without SEAM or WELD.

Plain and Patent Galvanized Telegraph Wire,

Market and Stone Wire, Annealed Fence and Grape Wire in long lengths; Coppered Pail-Bail Wire; Rope, Bridge, Bolt, Screw, Rivet, Buckle and Chain Wire. Wire for the manufacture of Card Clothing, Heddles, Reeds, &c. Piano-string Covering Wire, Tinned Broom Wire and Tinned-plated Wire of all sizes. A specialty is made of Clock, Machinery, Gun Screw and Spiral Spring Wire, and Refined Wire to Pattern for particular purposes, from selected stamps of Norway Iron. Any grade of Wire furnished, Annealed, Bright, Polished, Coppered, Galvanized or Tin Plated. Wire furnished, Straightened and Cut to any length.

Steel Crinoline Wire, Patent Linen finish.
Unrivalled Steel Music Wire.

Steel Wire for Springs, Needles and Drills. Market Steel Wire kept in stock, all sizes.

Warehouse, 42 Cliff Street, NEW YORK.

THE

Gilbert & Bennett Mfg. Co.,

GEORGETOWN, CONN.,

MANUFACTURERS OF

Iron Wire, Curled Hair

AND GLUE.

Coal, Oat and Hair Sieves.
Hair & Wire Gravy Sieves.
Brass and Iron Riddles.
Brass and Iron Wire Cloth.
Cheese Safes.
Coal and Sand Screens.
Wire Ox Muzzles.
Stove Cover Lifters.
Coal Hods and Shovels.
Stove Scrapers and Pokers.

Gilbert's Rival Ash Sieve.

UNION METALLIC CLOTHES LINE

WIRE.

The highest price paid for Cattle's Tails and Hog's Hair.

WAREHOUSE,

273 Pearl Street, New York.

THE TRENTON IRON CO.,

Trenton, N. J.

JAMES HALL, Treas. CHAS. HEWITT, Prest

IRON & WIRE.

Bar Iron.	Wire Rods.	Brazier Rods.
Market Wire, Screw Wire, Ball Wire, Fence Wire, Bridge Wire, Square Wire, Tinned Wire, Cast Steel Wire.	Coppered.	Weaving Wire, Spring Wire, Buckle Wire, Telegraph Wire, Chain Wire, Flat Wire, Coppered Wire, "Martin" Steel Wire

GUN SCREW IRON WIRE. NORWAY IRON WIRE.

Wire straightened and cut to any length. Represented in New York by

COOPER, HEWITT & CO., 17 Burling Slip.

ROEBLING'S

WIRE ROPE

For Best

IRON or STEEL WIRE HOISTING, RUNNING or STANDING ROPES, or BEST GALVANIZED CHARCOAL WIRE ROPES FOR SHIP'S RIGGING,

Address, JNO. A. ROEBLING'S SONS, Manufacturers, Trenton, N. J. or 117 Liberty St., N. Y.

Wheels and Rope for transmitting power long distances. Send for Circular and Pamphlet.

New Jersey Wire Mill.

HENRY ROBERTS,

Manufacturer of

Steel & Iron Wire,

SPECIALTIES.

Tinned Wire, Tinned, Broom, Spring Wire, made from Bessemer Steel; Cast Steel and Iron Coppered Ball Wire; Rivet, Screw, Buckle, Umbrella, Fence Brush, Gun Screw Wire; Sewing Machine and Machinery Wire. Fine Wire for weaving. Also Wire of any shape made to order.

WIRE MILL, 39 Oliver St.,

Newark, N. J.

IRON AND STEEL WIRE ROPE

For Hoisting, Running & Standing Ropes, Ferries, &c.

CONSTANTLY KEPT ON HAND.

Address, HAZARD MFG. CO., Wilkesbarre, Luzerne Co., Pa.

SAMUEL PARKER & CO., Wethersfield, Conn.,

WEAVERS OF

BRASS COPPER, STEEL AND IRON WIRE CLOTH,

and Manufacturers of

Steel Casting Brushes, Steel Flue Brushes and Brooms,

Plain and Landscape Wire Window Screen Cloth a specialty.

STEEL SPARK CLOTH

and all heavy grades of Wire Cloth for

COAL SCREENS, WINDOW GUARDS, &c.

Brass, Iron, Steel and Galvanized Riddles, Wire Flower Stands and Baskets.

Steel Casting Brush.

New York Agency,

PATTERSON BROS., Park Row, N. Y.

RUSSIA SHEET IRON,

Perfect and No. 1 Stained, in Store and for sale at lowest rates by

A. A. THOMSON & CO., 213 & 215 Water St.,

NEW YORK.

The Darlington Iron Works.

The works of the Darlington Iron Company, at Albert Hill, in that town, are, without exception, the largest of their kind in Great Britain, and are distinguished by a number of remarkable features well worthy the attention of engineers and others. They are built in accordance with what Fairbairn in his "Iron Manufacture" has approved as the general principle that should be adopted in the arrangement of all large iron works—that is to say, the machinery is classed and fixed in the order of the different processes, so that the product of one machine is at once passed on to the next. They contain altogether over 200 puddling furnaces, being a larger number than that owned by any other single works in the United Kingdom. The works are divided into two different establishments—within 200 yards of each other, and known as the Albert Hill and Springfield Works, respectively. The Springfield Works are devoted solely to the manufacture of puddled bars, and contain 92 furnaces, 7 steam hammers, and two 24 in. forge mill trains, each with an engine attached. The general arrangement of the Springfield Works is carried out with admirable skill, and a proper discrimination of economical subserviency. From these works the puddled bars are carried by locomotives, owned by the company, to the Albert Hill Works close at hand, where they are manufactured into rails. The company do not produce anything else on a large scale except iron rails, but of this commodity they probably manufacture more than any other company or firm in England. Previous to the transfer of the works from Mr. William Barningham, their founder, to the company by whom they are now owned, their annual turn out of iron rails was about 70,000 tons, and as much as £865,000 has been turned over in a single year. But even with this enormous yield the productive resources of the works were not taxed to their full extent, for they were estimated by competent men two years ago to be capable of producing over 100,000 tons of rails per annum, although this figure has never yet been reached in any one year.

The Albert Hill Works were the first built by Mr. William Barningham, in the Cleveland district, and they were laid out on a plan of his own. The land he acquired for their site only cost £300 an acre in 1854, whereas ground in the same locality has recently been sold for £1000 an acre. After fixing upon the site of his intended works, Mr. Barningham attended the sale of the fixtures appertaining to the Manchester Exhibition of 1853, and brought the cast iron roof that covered the exhibition for a very low price. The same roof still covers the Albert Hill Works, and is remarkably well adapted for its purpose. Travelers on the main line of the Northeastern system between York and Newcastle must have noticed with surprise the ponderous and yet elegant looking Albert Hill Works of the Darlington Iron Company on the left hand, while the more recently built Springfield Works are on the other. Both works are thus in immediate contiguity to the northeastern main line, which may almost be said to run through their center. In the Albert Hill Works there are 105 puddling and 40 mill furnaces available for use. There are likewise four finishing mills and two forge trains, each with an engine. Attached to each of the finishing mills there is a blooming mill, so placed as to secure the greatest facility and economy of work. One of the finishing mills has 20 in. rolls, and is worked by a vertical engine with a 42 in. cylinder. The other finishing mills are worked by horizontal engines attached to each. Another 18 in. mill is driven by a horizontal engine with a 42 in. cylinder, and two 12 in. forge trains have each a separate engine with a 20 in. cylinder. The two forge trains are of 24 in. and 20 in. respectively, the former actuated by a horizontal engine with a 36 in. cylinder, and the latter by the same kind of engine with a 30 in. cylinder. The size of each of the two blooming mills attached to the finishing rail mills is 20 in., and each is fitted with rolls for the purpose of flattening the crop ends of rails, after being cut at the saws. One of them has a peculiar arrangement, which we have not seen elsewhere, for lifting the pile, so as to enable it to be passed through between the top and the center rolls. This is done by an application of levers actuated by a steam engine. It is so effective that the pile is lifted from the lower to the upper roll, and passed through without any aid from the men, thus obviating a great deal of manual labor. This plan was first introduced at the Albert Hill Works by Mr. Thompson, the engineer, and it has since been copied, we believe, at some other works, where its advantages have been enjoyed free of any charge, for the system was never patented.

All the puddling furnaces are worked by hand, being constructed in the ordinary way. There is, however, a special and rather an ingenious mode of charging and drawing the hot piles, which saves a great deal of time and labor. Over the top of every second mill furnace a compound cylinder is fixed on a couple of rails, by means of which a chain is drawn backward and forward over a pulley, according as it may be necessary to deal with the piles, which are carried on an appliance actuated by the chain. The mechanism of the apparatus is very simple, and can easily be worked by a single boy, whereas, we are informed, that previous to the introduction of this system sixteen men were required to do the same work. This is only one of many little labor saving appliances and processes, never patented or made public in any way, which have been adopted at these works, and it is, undoubtedly, greatly due to the advantages gained in this way that the Darlington Iron Works have had such a prosperous career, while neighboring concerns were experiencing "the uses of adversity."

Among machines designed for the manipulation of iron rails, a combined punching and straightening machine, of Mr. Thompson's invention, is especially entitled to notice. The rails are straightened very quickly, and with great accuracy, by means af an expanding ram actuated by right and left hand screws. The work can be done by boys with this machine, whereas only a skilled workman could undertake the straightening of rails by the ordinary method. Two of these machines at Darlington Iron Works have done more than a thousand tons of rails in a single week of six days, working at the rate of ten hours per day, and with two boys at each machine; and as a regular thing three boys and one man can both punch and straighten with this machine 100 tons of rails per day of ten hours, making them quite ready for fish plates. In addition to the two punching and straightening machines of this novel principle, there are five punching machines of the ordinary kind, each with an engine attached, adapted not only for rails, but for other work. There are also three rail presses, each having an engine to itself; two rail sawing machines, adapted for sawing the crop ends off the heaviest rails so as to leave them perfectly square. Eight steam hammers, nine mills, five pairs of mill saws, three sets of large shears, three pairs of guillotine shears, one large pair of lever shears, four pairs of steam pumps, two cinder mills for grinding fettling for the puddling furnaces, eight pairs of double steam pumps and five locomotives, make up an inventory of the principal contents of the Albert Hill Works, additional to those we have more particularly referred to. The pumps are fed with hot water, heated by the waste steam from the mill engines. The water supply is derived from the river Skerne, which runs close past the works. The whole of the mill and part of the forge furnaces are ventilated by three large stacks. The works employ from 1200 to 1500 men and boys, and consume from 200 to 300 tons of coal per day. The managing director is Mr. Thomas Barningham, nephew of the founder of the establishment, and the engineer is Mr. C. Thompson, by whom the engine was designed. The engine has been built to drive a 20 in. rail mill train, and is of a novel construction for this class of work, although an engine of the same size and make has been driving a 16 in. rail mill train for some time past at Albert Hill Works, and has rolled over 100 tons of rails in 12 hours. The second engine has, however, some improvements on the first one. The diameter of the cylinder is 42 in. and the length of stroke 40 in. The average speed is about 100 revolutions per minute. The fly-wheel is about 20 tons in weight, and the rim is cast in one piece, its diameter being 20 ft. 6 in., and was turned up on the exterior surface after the engine was erected, thereby enabling the engine to run with more than usual steadiness at an exceptionally high velocity. The exhaust steam from the engine is used to heat the water previous to being pumped into the boilers.—*The Engineer.*

Early Inventions.

A writer in the *Scientific Press* says:

The era of improvement may properly be said to have commenced in 1400. Previous to that time there is a very meagre record of the onward march of progress in mechanics and arts. With the exception of the invention of gunpowder, claimed by both Germany and China, and that of steam as a motive power (the practical application of which was as yet unknown), there were none of great value to the world.

Several important inventions and discoveries mark the fourteenth century, while many of lesser note added to the comfort and development of civilization.

Hats, so common now, were first invented in 1404. Algebra was first introduced into England by the Saracens in 1412. Paper made of linen rags was the production of the year 1417. To England is accorded the honor of the invention and use of the musket in 1421. A very useful, if not a great invention, was that of pumps in 1425. Diamonds were first cut and polished in 1439. In 1441 printing was invented by Faust, a German. Most persons are familiar with the traditional letters carved on the bark of a tree, the embryo type that were destined to merge into the grand art which is so prolific in practical benefits to the entire human race. England was slow to seize upon this new discovery, and it was not until 1474, a lapse of 33 years, that the art of printing was introduced into that country by Caxton. As a natural sequence, engraving on wood followed in 1460, and engraving on copper by an Italian in 1480.

With the general distribution of knowledge through the medium of the printing press came the necessity of better postal facilities. Post-offices were first established in France in 1464. The system was soon adopted throughout Europe. The year 1470 was rich in the production of almanacs at Buda and the invention of casts in plaster at Florence by Verichio. A rapid stride was made in the musical world by the invention of the violin in 1477. This year was also marked by the invention of watches at Nuremberg. The first watch is said to have been as large round as a hat, with cumbersome machinery, and a striking apparatus that told the hours and quarters with force enough to awaken the seven sleepers. Canals in modern style were built for the first time in Italy in 1481. The Greek language was introduced into England by Grocyn in 1491, and map and charts were unknown to the same country until 1489. Spinning wheels were invented in 1330, and playing cards, for the amusement of the French king, in 1390. Dice, it is recorded, were invented 1500 years B. C., and bellows 554 B. C. By this it would appear that gamesters and bellows menders were as common in early times as now.

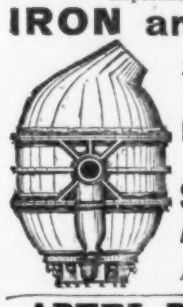
The various inventions of the fourteenth century were each of material benefit to science, art or commerce. But science is the most indebted to the three great discoveries—printing, watches and muskets. The first disseminates and preserves it; the second aids it at every step, and the science of war immeasurably advanced by the third. Germany, the first in grand results, has not since been superseded in the race by any country except the United States, the new republic's multitudinous and great inventions being in keeping with its rapid growth and prosperity.

Iron.

NEW YORK.

OGDEN & WALLACE,
Successors to GAM'L G. SMITH & CO.,
IRON WAREHOUSE,
85, 87, 89 and 91 Elm Street, New York.,
(One block below Canal Street.)
Common & Refined Bar Iron,
Sheet & Plate Iron, Rod, Hoop, Band, Scroll, Horse Shoe, Angle & Tee Iron,
PIG IRON, OLD RAILS,
WROUGHT IRON BEAMS.
Iron of all sizes and shapes made to order.

PIERSON & CO.
Iron Warehouse,
24 Broadway, 77 & 79 New St.,
NEW YORK CITY.
IRON and STEEL,
Common and Refined Iron Rods, Hoops, Bands, Scrolls, Horse Shoe, Ovals, &c., &c.
Swedes, Norway, Lowmoor & Bagnalls.
Orders filled from stock at lowest prices.

JACKSON & CHACE,
206 & 208 Franklin St., N. Y.,
Importers and Dealers in
IRON and STEEL.

Agents for
JOHN A. GRISWOLD & CO'S
Bessemer Steel.
MACHINERY STEEL,
Cast Steel and
SPRING STEEL,
ANGLE and T IRON.
Special Irons for Bridge and Architectural Work.

ABEEL BROTHERS,
Established 1765 by ABEEL & BYVANCK,
Iron Merchants,
190 South Street and 365 Water, N. Y.
ULSTER IRON
A full assortment of all sizes constantly on hand.
Refined Iron,
Horse-Shoe Iron,
Common Iron.
Band, Hoop and Scroll Iron.
Sheet Iron.
Norway Nail Rods.
Norway Shapes.
Cast, Spring and Tire Steel, etc.

A. R. WHITNEY. J. HENRY WHITNEY.
A. R. Whitney & Bro.,
Manufacturers of and Dealers in
IRON,
56, 58 & 60 Hudson,
48, 50 & 52 Thomas, and
12, 14 & 16 Worth Sts.,
NEW YORK.
Our specialty is in
Manufacturing Iron
Used in the Construction of
Fire-Proof Buildings, Bridges, &c.
AGENCY OF
Abbott Iron Co. Boiler Plate & Tank Iron.
Glasgow Tube Works Boiler Flues.
Pencoyd Iron Works Shafting.
Passaic Rolling Mill Angles and Tees.
A. R. Whitney & Bro.'s Rivets.
Whitney's Best Bar Iron.
Passaic Rolling Mill Wrought Iron Beams and Channel Iron.
Paxton Rolling Mills.
Books containing Cuts of all Iron now made, and Sample Pieces at office. Please address 58 Hudson Street.

METAL ROOFING.
Hickcox Mfg. Co.,
280 Pearl Street, N. Y.,
Manufacture the Patent Corrugated Iron Shingles, making the most durable Roof in the market, not affected by contraction or expansion, which causes soldered tin roofs to leak. Price only $7·50 per square, painted on both sides, packed ready for shipping.

BORDEN & LOVELL,
Commission Merchants
70 & 71 West St.,
Wm. Borden, L. N. Lovell, — New York.
Agents for the sale of
Fall River Iron Co.'s Nails, Bands, Hoops & Rods,
AND
Borden Mining Company's Cumberland Coals.

WILLIAM H. WALLACE & CO.,
IRON MERCHANTS
Cor. Albany & Washington Sts.,
NEW YORK CITY.
WM H. WALLACE WM. BISPHAM.

Iron.

NEW YORK.

C. HUERSTEL,
(Successor to CONKLIN & HUERSTEL.)
IRON AND STEEL.
WAREHOUSE,
99 Market Slip, N. Y.
IRON and STEEL of all kinds
Constantly on Hand.
Horse Shoe Iron & Nails, Norway Iron, Cast, Spring, Toe Calk, & Bessemer Steel Tire.
Also, SPRINGS, AXLES and BOLTS,
For Truck and Carriage Makers.

WM. GARDNER'S SONS.
SUCCESSORS TO WM. GARDNER,
575 Grand, 414 Madison & 309 Monroe Sts.
Bar, Hoop, Rod, Band and A. W. Horse Shoe Iron.
NORWAY NAIL RODS AND SHAPES.
Spring, Toe Calk, Tire & Sleigh Shoe Steel.
Manufacturers and Proprietors of
PATENT BOLT HEADER.

A. B. Warner & Son,
IRON MERCHANTS,
28 & 29 West and 52 Washington Sts.
BOILER PLATE,
Boiler Tubes, Angle, Tee & Girder Iron, Boiler and Tank Rivets.
Sole Agents for the celebrated
"Eureka," Pennocks,
"Wawasset," Lukens,
Brands of Iron. Also all descriptions of Plate, Sheet, and Gasometer Iron. Special attention to Locomotive Iron. Fire Box Iron a specialty.

Geo. A. Boynton,
BROKER IN IRON
70 WALL ST, N.Y.

POWERVILLE
ROLLING MILL,
JOHN LEONARD,
450 & 451 West Street, NEW YORK.
Manufacturer of all sizes of MERCHANT IRON and HOOPS. Also Manufacturer of
Best Charcoal Scrap Blooms.
And Dealer in Old and New Iron.

Marshall Lefferts, Jr.,
90 Beekman St., New York,
MANUFACTURER OF
AMERICAN
Galvanized Sheet Iron,
AND AGENT FOR THE
Easton Sheet Iron Works, Easton Pa.
MANUFACTURER OF
Best Bloom, Charcoal & Refined Sheet Iron.
Galvanized Telegraph and Fence Wire
Galvanized and Tinned Roofing and Slating Nails.
Galvanized Hoop Iron of all widths.
Galvanized Staples.
Corrugated Iron for Roofing, plain or gal'd.
Galvanized Bars and Chains for Cemetry Railing.
Tin Plates, Spelter, and other Metals.

DANIEL F. COONEY,
(Late of and Successor to Jas. H. Holdane & Co.)
88 Washington St., N. Y.
BOILER PLATES and SHEET IRON,
LAP WELDED BOILER FLUES.
Boiler Rivets, Angle & T Iron, Cut Nails & Spikes.
Agency for Pottstown Iron Co., Viaduct Iron Works, Lebanon Rolling Mills, Pine Iron Works, Laurel Iron Works, The Bergen Rolling Mills, at Jersey City.

Spooner & Collins,
COMMISSION AGENTS,
PIG IRON
Blooms, Bar, Sheet & Hoop Iron.
409 N. Third St., (Room No. 6), St. Louis.

Bonnell, Botsford & Co.,
Iron, Nails & Spikes.
YOUNGSTOWN, OHIO.

HOLDEN, HOPKINS & STOKES IRON, CAST STEEL, NAILS, RAILS, & R.R. SPIKES. 104-106 JOHN ST. NEW YORK.

Iron.

NEW YORK.

T. D. HAZARD,
BROKER IN
NEW & OLD RAILS,
Foreign and Domestic
PIG IRON,
Wrought and Cast Scrap Iron
AND GENERAL METALS.
204 Pearl St., New York.

JAMES WILLIAMSON & CO.,
SCOTCH AND AMERICAN
PIG IRON,
No. 69 Wall St., New York.

U. O. CRANE.
BROKER IN
PIG IRON & METALS,
104 John St. New York.

John W. Quincy,
98 William Street, New York.
Anthracite & Charcoal Pig Irons,
CUT NAILS, COPPER,
BLOCK TIN, LEAD, SPELTER, ANTIMONY, NICKEL, &c.

BOONTON
CUT NAILS,
HOT PRESSED NUTS,
Machine Forged Bolts,
Washers.
Fuller, Lord & Co.,
BOONTON IRON WORKS,
139 Greenwich Street, New York.

Swedish Iron.
A Variety of Brands, including
UB HP N.B 03
BARS suitable for Steel of all grades, Wire, Shovels, Hoes, Scythes, Carriage Bolts, Nail Rods, Tacks, &c.
CHARCOAL PIG IRON for Bessemer and Car Wheels.
MUCK BARS for Steel Smelting and Re-rolling.
SCRAP or BAR ENDS.
Direct Agency for N. M. HÖGLUND, of Stockholm, represented in the United States by
NILS MITANDER,
69 William St., New York.
ABBOTT & HOWARD, Boston, Mass. AGENTS: ALBERT POTTS, Philadelphia, Pa.

DANIEL W. RICHARDS & CO.,
Importers of and Dealers in
SCRAP IRON,
Pig Iron,
OLD METALS.
YARDS:
88 to 104 Mangin St., 71 to 79 Tompkins St., Foot of Stanton St., E. R., NEW YORK.
OFFICES.
90 & 92 Mangin Street, 178 Pearl Street, 30 The Albany, Liverpool, England. } New York.

B. F. JUDSON,
Importer of and Dealer in
SCOTCH AND AMERICAN
Pig Iron,
Wrought & Cast Scrap Iron,
English and American
HORSE SHOE IRON, &c.,
457 & 459 Water St., and 235 South St., NEW YORK.

REYNOLDS & CO.,
145 EAST STREET, NEW HAVEN, CT.,
Manufacture
Iron and Steel Set Screws, Round, Square and Hexagon Head; Machine and Cap Screws; Piano, Knob and Lock Screws; Machine, Bridge and Roof Bolts, Bolt Ends, Blanks, Nuts, Washers, etc., of every description
Send for Price List.

PETER P. PARROTT,
Manufacturer of the
"CLOVE"
ANTHRACITE PIG
IRON.
At Greenwood Iron Works,
ORANGE CO., N. Y.

Iron.

NEW YORK.

HARRISON & GILLOON
IRON AND METAL DEALERS,
558, 560, 562 WATER ST., and 302, 304, 306 CHERRY ST.,
NEW YORK,
have on hand, and offer for sale, the following:
Scotch and American Pig Iron, Wrought, Cast and Machinery Scrap Iron, Car-Wheels, Axles and Heavy Wrought Iron; also old Copper, Composition, Brass, Lead, Pewter, Zinc, &c.

OXFORD IRON CO.,
Cut Nails and Spikes,
R. R. Spikes, Splice Bars and Nuts and Bolts,
81, 83 & 85 Washington, near Rector St, N. Y.
JAMES S. SCRANTON, Agent.

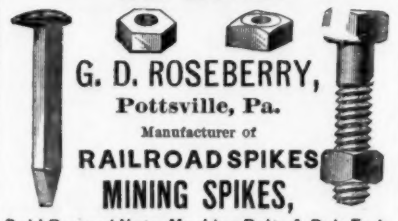
FLUOR SPAR
In Lump, Crushed, Ground, or extra fine, for sale by pound, barrel, ton or car load, by
SCHWEITZER MFG. CO.,
57 Reade St., N. Y.

DAVID CARPENTER & SONS,
Commission House
IRON AND STEEL,
Hot Pressed Nuts, Bolts & Washers,
402 Water Street, - - New York.
SCRAP IRON PURCHASED.

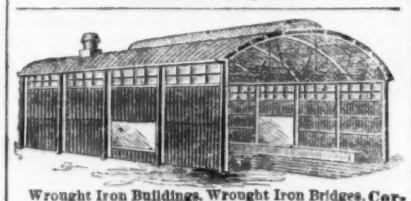
J. C. LEFFERTS,
Metal Broker,
PIG, RAILROAD & SCRAP IRON
241 PEARL STREET, NEW YORK.

ESTABLISHED 1840.
PETER TIMMES' SON,
Manufacturer and Galvanizer of
Wrought, Ship, Boat, Dock & R. R.
SPIKES, RIVETS, NAILS, &c.
Nos. 281, 283 & 285 N. 6th St.,
Near junction of N. 2d St., Brooklyn, E. D.

BURDEN'S
HORSE SHOES.
"Burden Best"
Iron.
Boiler Rivets.
Burden Iron Works, H. Burden & Sons
Troy, N. Y.

Pottsville Spike, Bolt and Nut Works.

G. D. ROSEBERRY,
Pottsville, Pa.
Manufacturer of
RAILROAD SPIKES
MINING SPIKES,
Cold Pressed Nuts, Machine Bolts & Bolt Ends

COLEMAR & B O.,
Manufacturers' Agents and Brokers
PIG IRON, NAILS, RAILS, NUTS,
And General Railroad Supplies.
LOUISVILLE, KY.


Wrought Iron Buildings, Wrought Iron Bridges, Corrugated Iron Roofs, Shutters, Doors, Flooring, &c. Corrugated Sheets of all sizes manufactured by Moseley Iron Bridge and Roof Co., No. 5 Dey St., N. Y.

Iron.

PITTSBURGH.

PENNSYLVANIA IRON WORKS.
EVERSON, MACRUM & CO.
Pittsburgh, Pa.,
Manufacturers of every description of
Bar, Sheet and Small Iron,
Make a specialty in
Fine and Common Sheet Iron.

W. P. TOWNSEND & CO.,
Manufacturers of
WIRE and
Black and Tinned Rivets
OF CHOICEST CHARCOAL IRON.
Rivets any diameter up to 7-16inch and ANY LENGTH required.
19 & 21 Market St., PITTSBURGH PA.

A. G. HATRY,
Manufacturers' Agent and Broker.
Bar, Sheet, Tank, Boiler, Angle, T, and Railroad Iron,
Nails & Spikes, Steel & R. R. Supplies.
PITTSBURGH, PA.

SHOENBERGER & CO.
Manufacturers of
CUT NAILS,
AND
Spikes,
HORSE AND MULE
SHOES,
Horse Shoe Bar, &
SHEET IRON.
Goods warranted equal to any in the Market. Send for Circulars in regard to "PICKED NAILS."
PITTSBURGH, PA.

Boston Rolling Mills
Manufacture extra quality small Rods, from best selected Scrap Iron.
Swedish and Norway Shapes,
NAIL and WIRE RODS. Also,
Horse Shoe Iron & Hand Made Horse Shoes.
BOSTON ROLLING MILLS,
W. R. ELLIS, Treasurer.
Office, 17 Battorymarch St., Boston.

Warren Boiler Works,
Phillipsburg, N. J.
Steam Boilers,
Tanks,
Heaters,
Stacks, Pipe,
And all Wrought Iron work made to order.
ESTIMATES GIVEN ON CONTRACT WORK FOR FURNACES AND ROLLING MILLS.
A Liberal Discount on Boilers to Engine Builders.
Prices given on application. Address,
TIPPETT & WOOD.

"PEMBROKE"
Round, Square & Flat Iron.
"FRANCONIA" Shafting & Bar Iron.
Extra quality when great strain or superior finish is required. Also, Irons for ordinary work, like the
"ENGLISH REFINED."
WM. E. COFFIN & CO.,
No. 8 Oliver Street, Boston.
New York Agents,
JEVONS STROUD & CO., 104 John St., N. Y.

ASA SNYDER,
Importer of Scotch, and Furnace Agent for the celebrated Anthracite and Hot and Cold Blast Charcoal
PIG IRONS.
OFFICE AND YARD:
1008, 1010, 1012 and 1014 Cary Street, Richmond, Va.
Orders for Scrap Iron filled.

L. S. TAYLOR. WM. MITCHELL. C. H. POND
TAYLOR, MITCHELL & POND,
Manufacturers of
MERCHANT IRON
And Light T Rail.
Massillon, Ohio.

FOUNDRY FACING CO.
Miners and Manufacturers of Walsh's
Celebrated XX Mineral Facings
And Dealers in FOUNDRY SUPPLIES.
P. O. Box. 4536.
121 Chambers Street, NEW YORK

Phoenix Brass & Iron Foundry
EDWARD GOUGH, Allentown, Pa., Manufacturer of
Soft & Hard Chill Rolls, Sand Rolls & Pinions.
Hard Chill Rolls are guaranteed to be uniform and made to any depth of chill, to suit.
The only manufacturers of Soft Chill Rolls in the United States.

New Patents.

We take from the records of the Patent Office in Washington the following specifications of certain patents lately issued, which will be found interesting :

IMPROVEMENT IN FURNACES FOR SMELTING ORE.

Specification forming part of Letters Patent No. 166,977, dated August 24, 1875, issued to William E. C. Eustis, Milton, Mass.

Figure 1 is a top view and Fig. 2 a longitudinal and vertical section of said furnace.

This furnace can be used for forcing air and gas in separate columns through charges of metal, as iron, for instance, or of ore and metal, and passing the resultant spent gases of combustion through like charges, and next by reversal of the direction of the said currents, passing the air and gas through the last mentioned charges, and the products of combustion through those first mentioned, whereby the charges to be melted are made to serve to heat the gases for melting them.

In the drawings, A denotes the main reduction chamber of the furnace, the hearth of which is shown at *a*, the crown or roof at *b*, the doorways at *c c c*. Leading upward from opposite ends of the main chamber are two auxiliary chambers or ore receptacles, B B', between which there are arranged two others, but smaller in hight and diameter or width, these latter being shown at C C'. The floors of the chambers C C' are above the roof of the main chamber A, there being between the two, and extending over the said roof, in manner as shown, an open space or passage, D, the purpose of which is to enable access to be readily had to the roof and parts about such passage for repair thereof, as occasion may require. From each of the chambers C C', at or near its bottom, an inclined passage, E or E', leads into one of the ore chambers B B'—that is, the chamber C communicates with the chamber B by the passage E, and the chamber B' with the chamber C' by the passage E'. These chambers are closed at their tops, except that to each there is a charging-hopper or induct, as shown at F, F', G, and G'. Furthermore, branch pipes H H' from a gas conduit, I, lead into the said ore chambers B B', there being at the junction of the said branch pipes and gas conduit a damper, by means of which, while gas may be forced into the pipe I, such gas may be caused to pass into either branch pipe, and be prevented from passing into the other. An air induct, L, provided with a regulating valve, M, communicates with the two metal chambers C C' by a cross or branch conduit, N, and also with a valve case, O, which opens into an educt or continuation, P, of the gas induct I. The case O is furnished with a valve, R, to regulate the escape of air into the educt P, which generally is to lead to and into a chimney. There is also at the crossing or junction of the conduits L N a reversing damper, S, by which the air may be caused to pass into either of the chambers C C' at pleasure.

In using the above described compound furnace the two larger auxiliary vertical chambers B B' are to be charged, like the stack of a common smelting furnace, with iron ore, and the two auxiliary vertical chambers C C' are to be charged with pig iron or scrap iron, or both. Combustible gas is to be blown down through the ore charge in the chamber B, and a blast of air is at the same time to be forced down through the charge of the chamber C, opening into such chamber B. The air and gas, commingling, are to be inflamed in the lower portion of the charge of the chamber B, the flame being driven through the chamber A. The flame and spent gaseous products of combustion escaping from the chamber A will pass up into and through the charge of ore of the chamber B', and the charge of metal in the chamber C', and thence into the educt P. After this operation has gone on a sufficient time the reversing dampers are to be turned into positions at right angles with their former ones, whereby the gas will be caused to pass into and down through the hot ore charge of the chamber B', and the air blast will be made to pass down through the hot metal in the chamber C'. Both currents of air and gas, in going down through the charges, will absorb heat therefrom, so that when they come together in the lower part of the body of ore their combustion will be greatly promoted. The flame from them, rushing through the main chamber A, will, with the spent gases, pass up through the charges of the chambers B and C, and thence into the chimney, the amount escaping at any time from either of the chambers C C' being regulated by the valve R of the case O.

In consequence of the discharging passage of each chamber C C' being above the crown of the main chamber A, the molten metal from the charge in such chamber C or C' will flow directly downward into the lower part of the ore charge of the next chamber B B'—viz., into that part of it which, deprived of oxygen, may have been reduced to what iron smelters term "sponge"—and, passing by gravity into it, will mix with and flux it to better advantage than would be the case were the bottoms of the ore and metal chambers on a level, or thereabout. The metal and slag passing from the ore will flow over the hearth of the chamber A, through which chamber the flame of the acrated gas will also pass. The pig or scrap metal in each of the smaller auxiliary chambers C C' will be heated and melted by the flame and spent gases while going through it, the amount thereof passing through it, and escaping from it into the educt, being regulated by the damper R; consequently the rate of melting of the charge of the chamber C or C' will be entirely under control, such being an essential element in the successful making of iron and steel by this process. The melted metal from the chamber C or C' runs down into and through a pile of intensely heated metallic sponge, and by so doing becomes intimately mixed therewith. The metallic sponge is, so to speak, fluxed by the molten pig metal, any remaining oxygen in the sponge being extracted, and the melting of the sponge hastened or facilitated.

The chambers B B' and C C' may be arranged to open directly into the top of the main chamber A at its ends; but by having the chambers C C' open immediately into the chambers B B', and these latter into the main chamber, all as shown, we gain, as before stated, the advantage of dropping the melted pig or scrap metal directly upon the top or upper portion of the sponge, and its passage through such sponge, so as to facilitate or hasten the melting thereof.

Claim.—1. The compound furnace for treating ore and pig or scrap metal, the same being composed of the main chamber A, the two ore receiving chambers B B', the metal receiving chambers C C', the connecting passages E E', and the system of gas and air inlet conduits I H H' L N, dampers K S, air escape regulating valve R and educt P.

2. The compound furnace, as provided with the separation chamber or space D, arranged with the main and auxiliary chambers A B B' C C' and the inclined passages E E'.

3. In the manufacture of iron from the ore, or in remelting iron, the above described process, which consists in forcing air and gas in separate columns through charges of metal, or ore and metal, and passing the resultant spent gases of combustion through like charges, and next, by reversal of the direction of the said currents, passing the air and gas through the last mentioned charges, and the products of combustion thereof through those first mentioned, whereby the charges to be melted serve to heat the gases for melting them, all being substantially as set forth.

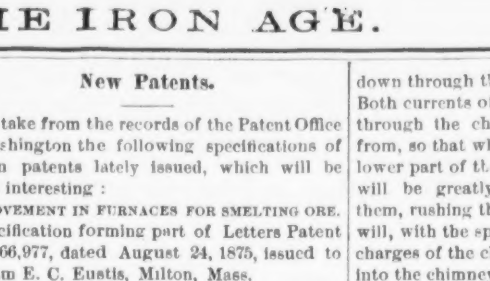


Fig. 1.

IMPROVED SMELTING FURNACE.

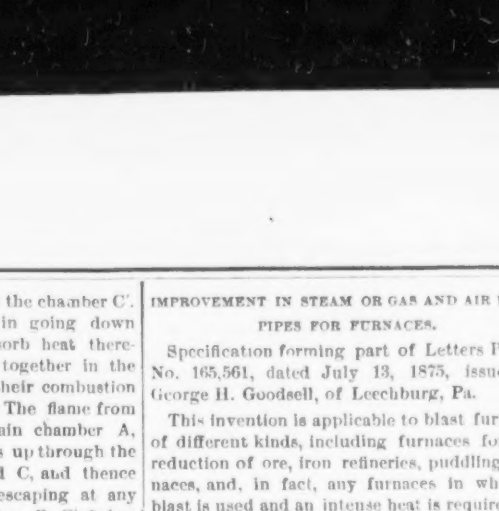


Fig. 2

IMPROVEMENT IN STEAM OR GAS AND AIR BLAST PIPES FOR FURNACES.

Specification forming part of Letters Patent No. 165,561, dated July 13, 1875, issued to George H. Goodsell, of Leechburg, Pa.

This invention is applicable to blast furnaces of different kinds, including furnaces for the reduction of ore, iron refineries, puddling furnaces, and, in fact, any furnaces in which a blast is used and an intense heat is required, as in the manufacture of iron, for which purpose the invention will here be described as applied to.

The invention consists in the combination, with the air blast pipe, of one or more steam or gas pipes arranged to conduct a current or currents of steam or gas, or both, in front of the air blast as it issues from its pipe, whereby a more intense heat is produced, also a more perfect combination effected and the product of the furnace improved.

Figure 1 is a longitudinal vertical section of a furnace tuyere, with air blast pipe and steam or gas pipe combined, and Fig. 2 a horizontal section thereof.

A is the tuyere, which may be of the ordinary construction, the improvement being capable of application to tuyeres now in use without altering the same. B is the air blast pipe inserted in the tuyere. C C are tubes arranged to enter the tuyere on either side of the air blast pipe, and with their delivery ends made to project in front of said blast pipe within the tuyere. These tubes serve to conduct steam or gas, or both, in advance of the air blast, and so that the steam or gas is caused to mingle with the air of the blast at the most efficient point to bring them and the air in contact with the fire. Said tubes C C may be connected outside of the tuyere with a valve, D, common to both, for regulating the supply of steam or gas, or for shutting off the same when the air blast alone is required to be used; or the steam or gas may be used alone, or in combination with the air, as circumstances require. The valve D is connected at *b* with the gas supply pipe, or, by removing the latter, with a steam supply pipe of the same size, by means of a union coupling. Coal or any other suitable gas may be used. The tubes C C, instead of being arranged outside of the blast pipe B, as represented, may pass through the interior of said pipe. The gas or steam being conducted through or inside of the tuyere to a point in front of the blast pipe nearest to the furnace, the force of the blast will drive the steam or gas to its proper point of contact with the fire. By this mode of introducing the steam or gas, or both, in common with the air of the blast, a more intense heat may be obtained, and mor perfect combustion, also a much superior quality of iron be produced.

Claim.—The combination of the tuyere A, air blast pipe B, arranged therein, and steam tubes *c c* on the exterior of, and projecting in front of, the air blast pipes.

Fig. 1.

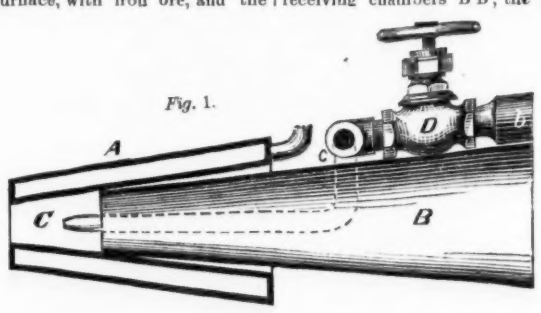
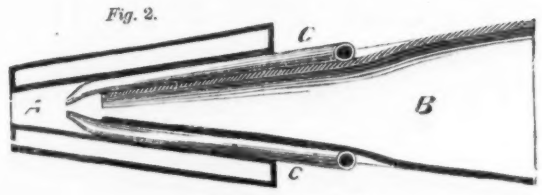


Fig. 2.



IMPROVED BLAST PIPE

IMPROVEMENT IN THE MANUFACTURE OF IRON AND STEEL.

Specification forming part of Letters Patent No. 166,454, dated August 10, 1875, issued to Anson G. Cook, of Burlington, Vt.

This invention consists in combining certain grades of pig iron, steel and wrought iron in the proportions hereinafter named, by which a new product is obtained possessing nearly all the properties of steel.

Nothing new is claimed in the process by which these elements are combined so as to form a homogeneous metal. It is essentially set forth in prior patents, No. 52,648, dated February 20, 1866, for an improvement in cupolas or blast furnaces, and No. 62,819, dated March 12, 1867, for an apparatus for rectifying or refining iron

The formula is as follows: To every 600 pounds of gray iron, commonly known as No. 1 iron, add from 500 to 800 pounds of white iron, known as No. 6 iron, and 200 pounds of Scotch iron, and upon this place 100 pounds of steel and 50 or more pounds of wrought iron. This mass is placed upon the coal bed of the cupola or blast furnace, and when thoroughly fused and in proper condition, is drawn into the refiner. By this process the necessary elements which are essential to great strength, toughness and hardness of the iron required to be used, are thoroughly developed and become absorbed and assimilated by the above mixture, and the result is an iron combining, in its elements, the greatest elasticity, strength and durability, and possessing a surface susceptible of the highest polish.

Claim.—A metal composed of gray or No. 1 iron, white or No. 6 iron, Scotch iron, steel and wrought iron combined, in about the proportions and substantially as described.

Iron.

CLEVELAND.

CLEVELAND ROLLING MILL CO.,

MANUFACTURERS OF

BESSEMER STEEL RAILS,

Steel Plates and Forgings, Railroad Iron, Merchant Bar, Beams, Girders, Splices, Bolts, Spikes, &c., &c.

Office, Nos. 99 and 01 Water St., CLEVELAND, O.

A. S. STONE, Pres. H. CHISHOLM, V. P. & Gen. Supt.
E. S. PAGE, Sec'y.

Cleveland, Brown & Co.

IMPORTERS, MANUFACTURER AND DEALERS IN

IRON AND STEEL,

HORSE SHOES, HORSE NAILS,

NORWAY NAIL RODS,

NAILS, SPIKES,

"Standard Taper" Axles & Swedes Iron.

WINDOW GLASS,

Wrought Iron Pipe and Boiler Tubes.

Chains, Rivets, Nuts, Washers, and Heavy Hardware Generally.

25 27, 29 & 31 Merwin Street,

CLEVELAND, OHIO.

OLD DOMINION
Iron and Nail Works Co.,

RICHMOND, VA.

R. E. BLANKENSHIP, Commercial Agent,

Manufacture

NAILS AND BAR IRON.

Bands, Scrolls, Horse Shoe Bars, Nut and Rivet Iron, Spike Rods, Shafting, Bridge Bolts, Ovals, Half Ovals, Half Rounds, &c.

The Iron-Masters'
Laboratory.

Exclusively for the Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags & Coal for Practical Metallurgical Purposes.

No. 339 Walnut Street, Philadelphia.

J. BLODGET BRITTON.

This Laboratory was established in 1866, at the instance of a number of practical Iron-masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for melting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in an ordinary Ore	$4 00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do	12 50
For each additional constituent of usual occurrence	1 50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur and Phosphorus in Iron or Steel	14 00
For each additional constituent of usual occurrence	6 00
For the per cent. of Carbonate of Lime, and Insoluble Silicious Matter in a Limestone	10 00
For each additional constituent	2 00
For the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12 50
or determining the constituents of a Clay, Slag, Coke, or of an Ash of Coal the charges will correspond with those for the constituents of an ore.	
For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.	
Printed instructions for obtaining proper average samples for analysis furnished upon application.	

SCHOOL OF MINES,

COLUMBIA COLLEGE,

East 49th Street, NEW YORK.

FACULTY:

F. A. P. BARNARD, S. T. D., LL. D., President.
T. EGLESTON, Jr., E. M., Mineralogy and Metallurgy
FRANCIS L. VINTON, E. M., Mining Engineer.
C. F. CHANDLER, Ph. D., Analytical and Applied Chemistry.
JOHN TORREY, M. D., LL. D., Botany.
CHARLES A. JOY, Ph. D., General Chemistry.
WILLIAM G. PECK, LL. D., Mechanics and Mining Surveying.
JOHN G. VAN AMRINGE, A. M. Mathematics.
OGDEN N. ROOD, A. M., Physics.
JOHN S. NEWBERRY, M. D., Geology and Palæontology.

The plan of this school embraces a three years' course for the degree of ENGINEER OF MINES, or BATCHELOR OF PHILOSOPHY.

For admission, candidates for a degree must pass an examination in Arithmetic, Algebra, Geometry and Plain Trigonometry. Persons not candidates for degrees are admitted without examination, and may pursue any or all of the subjects taught. The next session begins October 2nd. The examination for admission will be held on June 23rd and September 29th, 1871. For further information and catalogues, apply to

DR. C. F. CHANDLER,
Dean of the Faculty.

WALLACE & HUMPHREY,
Analytical Chemists,

113 Walnut St., PHILADELPHIA.

Special attention given to analysis of Iron and Steel.

MAYNARD & VAN RENSSELAER.

CONSULTING

Mining and Metallurgical

ENGINEERS,

Experts in Iron and Analytical Chemists.

26 1-2 Broadway, NEW YORK,

George W Maynard. Schuyler Van Rensselaer.

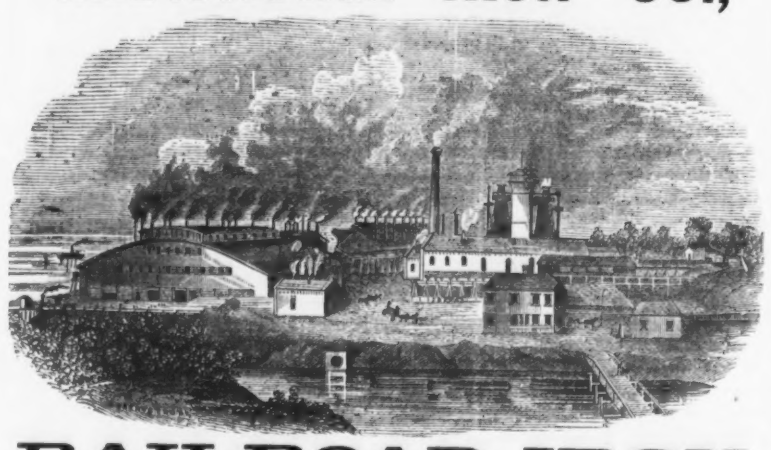
Edward J. Hall, Jr.

BLAST FURNACE ENGINEER.

452 Franklin St., BUFFALO, N. Y.

Iron.

MILWAUKEE IRON CO.,



RAILROAD IRON

From 30 to 65 Lbs. per Yard.

Re-Rolling done on short notice.

PIG IRON.

BEST No. 1 FOUNDRY IRON constantly on hand and for sale in car-load or larger lots, at lowest market price.

Merchant Bar Iron.

A FULL ASSORTMENT—SUPERIOR QUALITY.

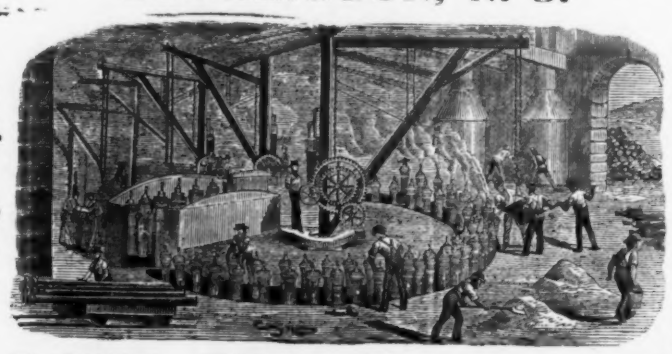
Address all correspondence to

MILWAUKEE IRON CO.,
MILWAUKEE, WIS.

JOHN McNEAL & SONS,

BURLINGTON, N. J.

Flange Pipes.



General Foundry Work.

CAST IRON PIPES

FOR WATER AND GAS.

John H. Reed & Co.,
IRON MERCHANTS.

And Agents for

BAY STATE IRON CO.

Manufacturers of Homogeneous Boiler and Fire Box Plates.

and Dealers in Plate, Sheet, Pig and Railroad Iron.

Wrought Iron Girder, Channel & Deck Beams.

ANGLE & T IRON, BOILER & TANK RIVETS,

Lap-welded Iron Boiler Tubes,

Wrought Iron Steam & Gas Pipe.

OFFICES,

2 Pemberton Sqr., Boston, Mass.

Baltimore STEEL HOE Works,
O. H. HICKS & CO.

Manufacturers of the

Lockwood Hoe,

Send for Sample and Price List.

BALTIMORE, MD.

EDWARD PHELAN,

Surviving Partner of W. F. SHATTUCK & CO.,

No. 113 Chambers and 95 Reade Streets, New York,

MANUFACTURER OF AMERICAN HARDWARE.

Coes & Taft's Pat. Wrenches.
Axe, Pick, Sledge & Hammer Handles.
Gimlets and Gimlet Bits.
Augers and Auger Bits.
Cocoa Nut Drippers
Wire Seives.
Scale Beams.
Patent Tap Borers.
Cortlandt Horse Nails.
Maguire's Wr't Iron Goods.
Shattuck's Platform Counter Scales.
Yaw's Cow Bells.
Axes, Picks and Hatchets.

Iron.

WHEELS AND AXLES MADE OF THE BEST STOCK AND IN THE MOST careful MANNER. FURNISHED SEPARATELY OR "FITTED" MAKING COMPLETE SETS.

TAYLOR IRON WORKS

ON THE LINE OF THE CENTRAL R. R. OF NEW JERSEY

HIGH BRIDGE, N. J.

CAR WHEELS & AXLES

DRAW HOOKS AND FORGINGS.

LEWIS H. TAYLOR PRES'T.
J. RABER, SUP'T
JAS. H. WALKER SEC'Y & TREAS.

NEW YORK OFFICE 93 LIBERTY ST.

STEEL TIRED WHEELS MADE UNDER SAX & KEAR'S PATENT FOR LOCO TRUCK AND TENDER AND PASS'R CAR SERVICE.

ATKINS BROTHERS,

PROPRIETORS OF THE

Pottsville Rolling Mills & Pioneer Furnaces

POTTSVILLE, PENNSYLVANIA.

Having introduced New and Improved Machinery into their Rolling Mills, and manufacturing all their Iron from the ore, and also doing all Machine Work and Repairs in their own shops, they are enabled to produce

RAILROAD IRON

Of uniform quality, unsurpassed for strength and wear, and of any required length.
Address the Proprietors Pottsville, Pa.

The Britannia Ironworks Company, Limited,
Middlesbro' England,

MANUFACTURERS OF

ALL DESCRIPTIONS OF IRON RAILS

Surplus Stocks of Various Sections always on hand.

London Office: W. G. FOSSICK, 6 Laurence Pountney Hill, E. C.

Weekly Output, One Thousand Tons.

HEATON & DENCKLA,

HARDWARE COMMISSION MERCHANTS,

PHILADELPHIA.

Branch Office, 97 Chambers and 81 Reade Streets, N. Y.

AGENCIES:

Mallory, Wheeler & Co.
American Screw Co.,
Douglas Axe Mfg. Co.,
Stuart, Peterson & Co.'s Castings,
Morton & Bremmer's Balances.
Foster's Horse Nails.
Anchor Brand Nails,
Lewis' Anvils and Chains.
"Eagle" Trace Chains,
Royer's Ford Sad Irons.
Gaylord Mfg. Co.'s Locks.
Plymouth Mill Rivets.
Union Mfg. Co.'s Drilled Butts.
Western File Works.
Philadelphia Carriage Bolts.
Aiken's Saw Sets.
Cast Steel, Octagon, Flat and Square, &c., &c.

BAEDER, ADAMSON & CO.,

Manufacturers of

Sand and Emery Paper and Emery Cloth

(Also, in Rolls for machine work.)

GROUND EMERY, CORUNDUM AND FLINT,

Glue & Curled Hair, Cow Hide Whips.

STORES:

PHILADELPHIA, 730 Market St., | BOSTON, 143 Milk St.,
NEW YORK 67 Beekman St., | CINCINNATI, 92 Main St.,
CHICAGO, 182 Lake St.

BIRMINGHAM SCREW CO., Limited.

ALFRED FIELD, President.

The Screws of this company are imported only in small, limited quantities.

ALFRED FIELD & CO.,

Sole Importers,

93 Chambers and 75 Reade Streets, N. Y.

Middletown Tool Co.,

MIDDLETOWN, CONN.

Manufacturers of

The Celebrated "Baldwin" Plane Iron.

HENSHAW'S SNAPS

Greatly Improved in Style and Pattern.

HART, BLIVEN & MEAD MFG. CO., Agents

18 & 20 Cliff Street, N. Y.

JOHN CRANE, Agent, 103 Chambers St., N. Y.

GREENSBORO' HANDLE WORKS.

Manufacturers of SPOKES and CARRIAGE WOOD WORK, AXE, PICK, German and American SLEDGE and other Handles.

Send for Catalogue and Price List.

JAMES C. HAND & CO.,

Commission Merchants,

PHILADELPHIA.

AGENTS FOR THE SALE OF

PIG IRON, Wm. Penn, Norristown and Reading Furnaces.
WM. JESSOP & SONS' Cast Steel, &c., &c.
READING NAIL AND IRON CO.'S (Crescent Brand) Nails, Brads and Spikes.
BARROW, SAVERY & CO.'S Tinned, Enameled and Plain Hollow Ware, Medium and Carron Hollow Ware, Sad, Tailors' and Laundry Irons, Fire Dogs, Wagon Boxes, Savery's Patent Combined Enameled Water Cooler and Refrigerator, &c., &c.
PENNSYLVANIA CORUNDUM CO.'S Corundum in Casks and Packages.
WASHINGTON MILLS EMERY CO.'S Best Turkish Emery in Casks and Packages
FISHER & NORRIS' Patent American Anvils and Vises.

The Condition of Labor in England and America.

At the annual meeting of the Hawarden Literary Institution, held on Tuesday, the Rev. Stephen Gladstone presiding, the adoption of the report was moved by the Right Hon. W. E. Gladstone, who said: I wish you to consider a few things which I will endeavor to lay before you. In the first place let me say, in recommending to your encouragement and patronage an establishment of this kind, I do not do so as if either bodily exercise or even mental culture and improvement of our intellectual faculties are of themselves the whole of what man requires in the course of this his pilgrimage upon earth. Man has three forms of life—his spiritual life, his intellectual life, and his bodily life. It is in relation to God, and upon his relation to God, upon the knowledge of God, and upon all that concerns that knowledge, that his destiny and his happiness really depend. On these matters I don't presume to address you. It is no part of my function here. I address myself here to a lower task, but still to a very high task, when I ask you to consider what can be done to consider the question of the intelligent life that we ought all to endeavor to live, and what belongs to such an institution as this. Now, as I said, believing that this institution, if it is to prosper, must be a popular institution, having its foundation in the minds of those who are called the laboring part of the population, I must necessarily consider a question which may occur to them all, and which, in other times, must have occurred to any of them who were solicited to enter establishments of this kind. I have said that man has an intelligent life, and likewise a bodily life and material life. Of the bodily or material life the wants are perfectly imperative and indispensable. It is in his choice, to a great degree, whether he will cultivate his intellectual faculties. It can hardly be said to be in his choice whether he will labor for the supply of his bodily wants, and the supply of the wants of those who are immediately depending upon him. It often happens in the mixed and imperfect condition in which we live that the exigences of the bodily and material life are such, and the means of supplying them so limited, that they actually press out—squeeze out, if I may say so—the opportunity of attending to the wants of our intellectual life. And that, perhaps, is the great excuse that men would make for passing by the calls of an institution of this kind. They say: "It is all very well for people with plenty of money to spend, but I am a laboring man, dependent upon my hands, dependent upon my health. I have got a wife and children to support. It is not for me, and I won't be bothered with it." It is now about 36 years ago since, very greatly to my own comfort and advance, I became very closely connected with this place, and that is a very limited time in the life of a community. But what immense changes have taken place in the position of the agricultural laborer even within that time! The right honorable gentleman then referred to Mr. Eden's work on the condition of agricultural laborers in the counties in England between the years 1790 and 1800, to show that the average wages then received by an agricultural laborer to support his wife and family was 8/ per week. Continuing, he said: Of 62 cases of families, which are given in the most minute manner, in 49 of them the wages of the man and of his family were not sufficient to meet the expenditure, the expenditure being based upon a narrow, scanty and defective scale. That was the condition of what we called "Merry England" 80 years ago, and now you hear people sometimes say that the time of "Merry England" is gone by. Well, it may not be as "merry" now in all cases as we should wish it to be, but I expect it is quite as merry as it was in the times of your fathers and grandfathers, and many generations before them, and a good deal merrier, too. As regards mining labor, the change has been very great and extraordinary. I don't speak of the change which has taken place within the last three or four years. I hope there are a great many good miners in this room, and to them I would say as a friend, I have always looked upon the change with very mixed feelings. It was too great—too sudden—not to be of a short-lived character. It was quite manifest that so great and so sudden a change could not be supported permanently. It is not in the nature of things. The laws of the trade did not permit the rise that took place three or four years ago in the price of coke and of coal, and I say it was entirely without precedent. It was like a great storm that disturbs the air with exceeding violence. Those changes which are to be desired are changes slower and more gradual, but of a more solid and permanent kind. Apart entirely from this great change, there has been a great upward movement on the part of miners in other senses of the word. Without great augmentation of means, there is something at any rate which a man may venture to spare for his mind. It may be, perhaps, thought this augmentation of means has been neutralized by an augmentation of prices. That is not so. There are no augmentations of prices at all to account for the difference between the wages of those days. It is true that some prices are raised. The price, for example, of meat is considerably raised. What did that signify to those men? Nothing at all. It was very well that it should be cheap, but it was totally beyond their reach. But meat a hundred years ago was not equal in quality to what it is now. Remember that, and when we hear so much from the people of all classes about the increased cost of living the reply is: In some points it is true—in some points it is totally untrue, because such articles as tea and sugar and clothes are enormously reduced in price. But, independently of those cases where it is true and where it is totally untrue, it very commonly means this, that people are not contented to live; and I don't say that it is unreasonable. On the contrary, it is thought now they have many of the innocent means of health as well as subsistence and luxury to a degree which formerly they could not have, and which, in a degree, now forms part of the expenses of living. But I think you will admit that in this parish there is not a general presence of poverty among the laboring classes to induce men to say, "we will give everything to our bodily wants and the support of our families, and we will reserve nothing whatever for the cultivation of the mind." I hope nobody has been frightened by the formidable title "Literary and Scientific." "Literature," that is a very high flight; "science," that is a higher flight. Still, you may say that practically the exigencies of life are such that they will not allow a very large portion of literature or a very large portion of science to be pursued by the community at large. Now, my friends, let me say one word as to the kind of temptation I think besets those who are called upon for a great deal of bodily labor in their usual lot in life. When I speak of temptation, I don't now refer to those temptations which beset us all—I don't speak of those temptations which lead men—I hope in but rare instances—to neglect their wives and families and primary duties. All these I put by. I am going to speak of temptations of another class, but which have, perhaps, a readier access to those who labor hard, simply because they do not appear to involve, at first sight, any moral offence. I mean the temptation to bodily and mental indolence. Now, as far as the body is concerned, the body has pretty well done its duty when it has done the labor by means of which it obtains wages, but mental indolence is a sad thing. There is no reason why a mind of that kind should be inactive, and the owner of it should spend his time in lolling, loitering, whistling and playing marbles, and other trifling occupations which are unworthy to be called a substitute for occupation. It is quite evident, although the body is hard pressed by the labor of a population so energetic and industrious as this, yet it does not always feel entirely exhausted. Men have some strength remaining, and I am very glad that they have games of a character that require great bodily exercise; but what I entreat and desire is, that they would do the same justice to their minds that they do to their bodies. The fact of having bodily power may be a reason why they cannot give their minds to the most reduced description of reading and conversation or investigation, and, therefore, I admit that they may be frightened by the bugbear of a "scientific inquiry" which appears to be written over the door of our institution. But employment of the mind—relief to the mind—by useful employment and recreation does not in the slightest degree add to the fatigue which the body undergoes, and which promotes that equitable and general development of the faculties as between body and mind which is most conducive to the health, as well as to the happiness, of mankind. In this respect it must be admitted that we, as a people, don't come up to the proper standard. We don't do enough for the cultivation of our minds. We are, unless in the pressure of absolute necessity, a rather indolent people as regards mental cultivation, not in the lowest class, but in all classes. I will now speak of the people of Wales—that is, the Welsh speaking people. I don't know if any of you ever read a series of letters by Mr. Richard, the member of Parliament for Merthyr, a man of very considerable ability and high character, a distinguished Welshman, who sustains the character of a Welshman in the House with great effect. He published a series of letters in the *Morning Star*, which does not now exist, and brought them out as a small volume. I have read those letters with very great advantage, and I was very much struck by the character which he has given the Welsh people. It quite astonished me to see in how many respects the population can lay claim to credit and honor for all that most distinguishes good citizens and good men. Having quoted from Mr. Richard to show the literary tastes of the Welsh people, who, however, did not indulge in novels, the right hon. gentleman then concluded: I wanted to make a case in some degree, to show that the question whether you should take up this institution deserves serious consideration from those here, and a serious consideration from those to whom I hope those here will mention it. We desire that this institution should be popular, we desire that it should prosper on the present basis, and we desire to extend it. Mr. Gladstone, having warmly expressed his good wishes for the local institution, resumed his seat amid great cheering.

CONDITION OF THE WORKING CLASSES IN THE UNITED STATES.

We take the following from the forthcoming work of Dr. Edward Young on "Labor in Europe and America:"

The great advantages enjoyed by the workingmen in the United States, as compared with those of the same class in the Old World, are sufficiently attested by the deep and steady current of emigration which sets toward our shores. One of the most conspicuous of these advantages consists in the equality of political rights with which the workingman is here invested, and the comparatively high respect and dignity attached to his calling; but not less solid and decided are the advantages connected with abundant employment, good wages and the substantial comforts of life. It is true that, in common with other countries where the system of credit has been largely developed, our country has had its occasional financial crises, accompanied with serious interruptions to the ordinary course of commerce and industry; but such effects have been comparatively transient in their duration, and the normal condition of the country has been marked by a degree of prosperity rarely if ever enjoyed elsewhere; and rarely, if ever, in the history of the world has national prosperity been so largely shared by those usually denominated the working classes.

In some of the larger cities of our eastern coast, where the labor supply is receiving constant additions from the ranks of emigrants who lack the means of advancing farther into the country, there is at times considerable complaint of the want of adequate employment; and in such places there is occasionally some privation and suffering among the poor. In the city of New York, owing to its great extent, and the lack of adequate communication between its commercial center and its suburbs, large numbers of working people, in order to be conveniently near to their places of employment, are compelled to live in crowded tenement houses under conditions which are favorable neither to health, comfort nor decency.

In some of the manufacturing towns and villages of New England, particularly the seats of the textile industries, the dwellings of the poor are represented to be in a sanitary condition that is far from satisfactory. Such conditions are, however, quite exceptional, and the masses of working people throughout the country occupy comfortable homes, enjoy an abundance of good food and comfortable clothing, with opportunities for a good common school education for their children, and possesses a degree of personal independence not enjoyed on a large scale by any other laboring population on the face of the globe.

This statement is true, not only in regard to the workingmen of the rich agricultural regions of our vast interior, and the prosperous manufacturing towns with which those regions are dotted, but also to those of Philadelphia (not more famous for its industrial eminence than for the comfort of its workmen's homes) and most of the manufacturing towns of the New England and Middle States. Of these, Lynn, Worcester, Fitchburgh, Taunton and Springfield, in Massachusetts; Providence and Pawtucket, in Rhode Island; Hartford, New Haven, Bridgeport, Waterbury and New Britain in Connecticut; Albany, Troy, Utica, and Rochester in New York, and Newark in New Jersey, with various smaller towns in their vicinities, are best known to the author of this report in the States mentioned; while in Ohio and Illinois nearly every town engaged in manufacturing industry may be included in the same category.

The prevailing comfort and independence of the great masses of mechanics and laborers of this country, taking one section with another, being sufficiently verified by general observation, it is deemed superfluous to enter into a detailed descriptive account of their condition and mode of life. With respect to the dwellings of factory operatives in the exceptional localities, it may, however, be said that wherever their sanitary condition is seriously bad, it is believed to have been the fault of manufacturing corporations which own the tenement houses occupied by their employes, while operatives employed by individual manufacturers, who live among them and take an active and observant interest in their well-being, are far more comfortably situated. In a recent investigation conducted by the Massachusetts Bureau of Statistics of Labor, it was found that out of 393 tenements examined in different towns in that State, 288, or upward of 73 per cent. were worthy of being reported "good," while 105, or less than 27 per cent., ranged from "fair" to "very bad." The animadversions on the poorer class of tenements contained in the reports of that bureau have attracted public attention to the subject, and there is a good prospect that, either through the action of the State Legislature or by the force of public sentiment, abuses of this kind will soon be remedied.

The Massachusetts Bureau of Statistics of Labor has made careful inquiry into the receipts, expenditures, and general condition of the families of 400 workmen in that State, and published the results of the investigations. From the detailed statements which appear in the last report of that bureau, tables have been prepared, showing the yearly expenditures of 305 families for rent, fuel, groceries, meat and fish, milk, wearing apparel, and "sundries," together with their expenditures for books and papers, and their contributions to religious and other societies. They also show the earnings of the father, and of the children where they assist in providing for the household, the number of rooms occupied, number of persons in each family, and number of children attending school, with other information, indicating with sufficient clearness the condition of each family in respect to comfort, thrift, and æsthetic culture.

Around the World in Eighty-eight Days.—Jules Verne's delightful romance, entitled: "A Tour of the World in Eighty Days," may soon be rewritten with a substantial basis of fact to give it additional interest. The *United States Mail*, a journal devoted to postal matter, tells of a gentleman residing in the suburbs of New York, who recently made an experiment with a view to ascertain how long it takes a letter to travel round the world by mail. He addressed a letter to the United States postal agent at Yokohama, Japan, marked it "*via* Brindisi," and dispatched the same by steamer leaving New York for Southampton, England, on the 13th of May last. The letter inclosed another, addressed to himself, at New York, which he requested the postal agent at Yokohama to forward to the United States, *via* San Francisco, by first steamer. The letter arrived in England on May 24, and was thence dispatched by way of Brindisi, Aden (*via* Suez), Ceylon, Singapore, and Hong Kong to Yokohama, arriving there July 11. From there the inclosed letter (addressed to the writer) was forwarded by steamer leaving Yokohama on July 12, and arrived at San Francisco July 31; left San Francisco August 1, and reached New York August 9, having accomplished its circumferential journey in exactly 88 days.

USE THE BEST.

Pawtucket, R. I.

The American File Company have the exclusive right to use the Bernot process for cutting files By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing files and steel.

Goods of all known manufacturers have been repeatedly tested, and interesting tables have been compiled showing the working qualities of files made by different makers, and of files made from different steels, and with various shapes and angles of tooth They have thus reduced the manufacture of files to an exactness and perfection with a uniformity of result, as they believe, never before attained. No file, foreign or domestic, that they have ever tested, has equalled the performances of their own goods taken at random from their stock. Their machines are capable of the most delicate adjustment, and can produce the very finest work known to the trade. Special files made to order. Prominent file manufacturers are having their best goods from our works.

Price lists and information furnished on application.

AMERICAN FILE CO., Pawtucket, R. I.

THE BEST IS THE CHEAPEST.

McCaffrey's Standard American Hand Cut Files and Rasps are warranted to do more work than any other files and rasps in the market.

PENNSYLVANIA FILE WORKS.

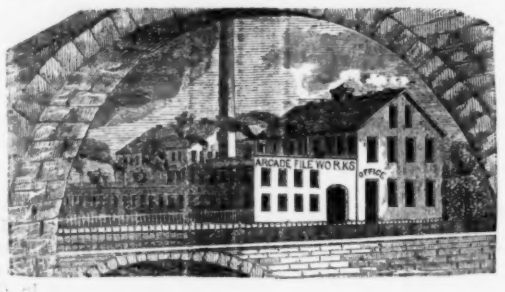
McCAFFREY & BRO.,

No. 1732, 1734 & 1736 North Fourth St., Phila.

Messrs. ARNOLD & CO., 310 California St., San Francisco. Sole Agents for the Pacific Coast.

ESTABLISHED 1848.

C. T. DRAPER & CO.
Sing Sing, N. Y.
Manufacturers of SUPERIOR
HAND CUT



FILES and RASPS
Made from Best
ENGLISH CAST STEEL.
Quality guaranteed by written warranty when required.

Eagle File Works. **Established 1857.**

Madden & Cockayne File Co.

(Late WHEELER, CLEMSON & CO.)

Manufacturers of the

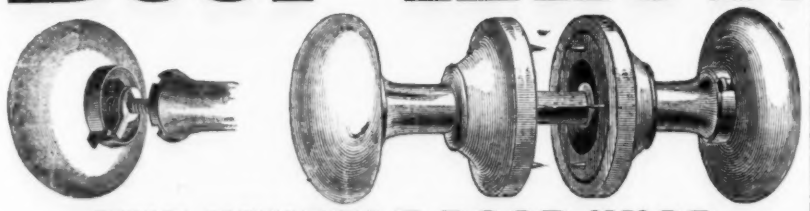
Old and Well Known "WHEELER, MADDEN & CLEMSON" Brand of

FILES.

Middletown, Orange Co., NEW YORK.

WHIPPLE'S PATENT

Door Knob.



THE WHIPPLE DOOR KNOB

Is the only perfect Door Knob Attachment ever invented.

AWARDED A BRONZE MEDAL

At the American Institute Fair, in New York, for 1874.

NO SCREWS USED IN NECK OR ROSES.

Adjusts Perfectly to Doors of Different Thicknesses

WITHOUT THE USE OF RINGS.

The attention of Architects, Builders and Carpenters is specially desired. Circulars fully describing the advantages of this Knob, with Price List, sent on application to

The Parker & Whipple Co.,

WEST MERIDEN, CONN.,

Or 97 CHAMBERS STREET, NEW YORK.

L. B. HELLER. I. R. DENMAN.

L. B. HELLER & CO.,

Manufacturers of Celebrated

American Horse Rasps and Files.

OFFICE, 190 Market Street,

P. O. Box, 223. NEWARK, N. J.

W. C. DUYCKINCK,

Importer and Manufacturer of

Steam Water Gauges,
Pipe and Fittings,
Scotch Glass Tubes,
Tube Expanders,
Twist Drills,
Emery Wheels,
Pipe Fitters' Tools,
Moulders' Tools,
Blacksmiths' Tools,
Machinists Fine Tools
Forges,
Hammers,
Wheelbarrows,
Wrenches,
Jack Screws,
Vises,
Flue Brushes,
Waste,
Belting,
Hose,
Packing,
Stubs' Goods,
Hair Felt,
Polishing Felt,
Emery Cloth,
Hand Drills,
Iron Punches,
Iron Shears,
Files,
Governors,
Bolts,

Railroad & Machinists' Supplies.

SEND FOR PRICE LIST.

50 and 52 JOHN STREET, NEW YORK.

ELIAS G. HELLER. GEO. E. HELLER.
PETER J. HELLER. JOHN J. HELLER.

We invite the attention of the trade to our **Celebrated American Horse Rasps and Files.** These Rasps are made from the very best American Steel, all cut by hand, and we warrant them equal to any other make in the market. For the information of persons unacquainted with our goods, we will state that every File or Rasp manufactured by us, since our establishment in 1866, have been stamped "*Heller & Bros.*" though commonly called the "*Heller Rasp.*" All Rasps not stamped as annexed diagram are not genuine. We will send sample lot, if requested, and if not as represented they can be returned, or held subject to our order, free of all charges. For sale by the leading Hardware Dealers in the United States.

Putnam's Government Standard

FORGED

HORSE SHOE NAILS.

Manufactured from the best of **NORWAY** Iron, and warranted to give entire satisfaction.

S. S. PUTNAM & CO.,

NEPONSET, MASS.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.,

303 Walnut St.,

PHILADELPHIA

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves, and firms connected with us, viz.

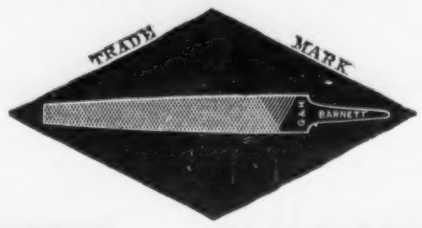
A. Pardee & Co.	HAZLETON, CRANBERRY, SUGAR LOAF
G. B. Markle & Co.	JEDDO, HIGHLAND.
Pardee, Bro. & Co.	LATTIMER

OFFICES:

WM. LILLY, Mauch Chunk, Pa.
WM. MERSHON, Agent, 111 Broadway N.Y
WM. H. DAVIS, Agent, Easton, Pa.

Black Diamond File Works.

Send for Illustrated Price List.



Send for Illustrated Price List.

G. & H. BARNETT. 39, 41 & 43 Richmond St. Phila.

LINFORTH, KELLOGG & CO.,

Sole Agents for the Pacific Coast, 3 & 5 Front St., San Francisco, Cal.

Established 1816.

Peter A. Frasse & Co.,

95 Fulton Street, New York,

SOLE AGENTS FOR:

Thomas Turner & Co.'s Suffolk Works,

SHEFFIELD.

FILES AND HORSE RASPS,

And Importers of

P. S. STUBS' FILES, TOOLS & STEEL,

W. J. Davies' Sons' London Emery Cloth,

HUBERT'S FRENCH EMERY PAPER.

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

89 Chambers and 71 Reade Streets, N. Y

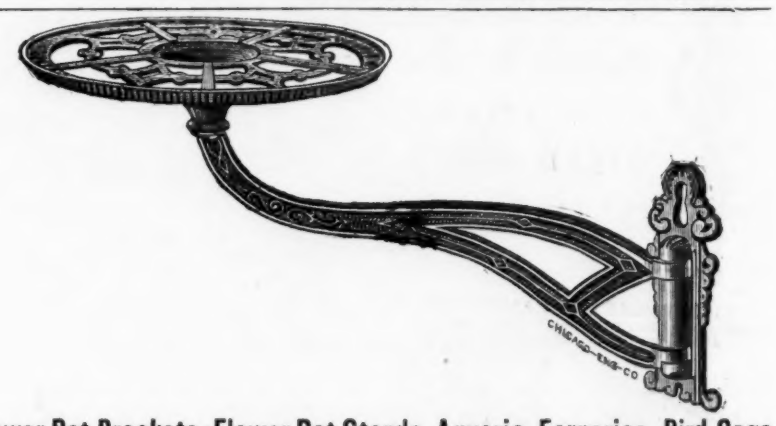
JOHN ROTHERY'S

Celebrated Hand-Cut FILES,

Made of Best English Cast Steel.

WALSH, COULTER & FLAGLER, Sole Agents,

83 Chambers and 65 Reade Streets, N. Y.



Flower Pot Brackets, Flower Pot Stands, Aquaria, Ferneries, Bird Cage Hooks, Propagating Cases, Window Gardens, &c., &c.

Send for a Catalogue.

G. WEBSTER PECK, Agent, 110 Chambers St., N. Y.

Tredegar Horse and Mule Shoes.

These superior Shoes are made of the Best Virginia Charcoal Iron. They are well adapted to Western and Southern demand, and are shipped to all prominent markets at freights as low as on other makes.

THE TREDEGAR COMPANY, Manufacturers,

Tredegar Iron Works, Richmond, Va.

SEMPLE, BIRGE & CO., Sole Western Agents, } **ST. LOUIS, MO.**

BUSINESS ITEMS.

PENNSYLVANIA.

J. Painter & Sons, Pittsburgh, are taking steps to make an addition to their new rolling mill, to be built entirely of iron, 160x77 feet. This makes the third iron mill put up for Messrs. Painter & Sons on the south side by W. B. Scaife & Sons. The trusses of the iron roof frame will carry three heavy lines of shafting for driving the machinery.

A large amount of machinery to be used in Louisiana in a process of manufacturing cane sugar is being shipped from the works of Morris, Tasker & Co., Philadelphia. The new method is known as the diffusion process as distinguished from the maceration process, which is that of all previously constructed sugar machinery. The cane is passed between rollers by the old method and the juice squeezed out. In the new, the cane is sliced and the saccharine matter is dissolved out of it. The machinery consists of a slicer which by a diagonal cut, reduces the cane to slices about one-eighth of an inch thick.

There was rolled at the Edgar Thomson Steel Works, the other day, a sixty pound steel rail sixty feet long. It is perfect, and is believed to be the first of this length ever rolled.

S. D. Hubbard & Co., Pittsburgh, manufacturers of the Eclipse Steam Pump, are now constructing the pumping machinery for the Clarion water works. When finished this machinery will have the highest duty to perform in the United States, the elevation being 500 feet vertical hight.

The Greenville Iron Company employ about 80 men at their mill.

MASSACHUSETTS.

Though a part of their works have been burnt this year, the Middleboro' Shovel Company are now employing 50 hands and turning out 50 dozen shovels per day. Beside shovels they also manufacture scoops and spades, and are running at present on full time. The firm have lately added a tack mill to their establishment, which uses up their scraps of steel. Their Boston salesroom is at 63 Oliver street.

The Taunton Locomotive Works are building twelve locomotives for the Union Pacific road. They are designed for passenger traffic only, and the cylinders are 24x18; drivers, 5½ feet. Two have been completed and forwarded to the road, and two more are finished, and will be forwarded at once.

RHODE ISLAND.

The Nicholson File Company's Works, Providence, have a capacity of 700 dozen files per day, which in the aggregate amounts to 2,629,200 files per year. The capital of the company is $400,000, and they furnish employment to 250 workmen. Over 400 different kinds of files are manufactured. Three engines, with 175 horse-power is used in propelling the machinery.

The Union Machine Company, Providence, occupy a building 40x80 feet in size, and employ from 10 to 15 men.

VERMONT.

The machine shop of F. G. & W. H. Brownell, Taftsville, has been rented by Buck & Collins, Lebanon, N. H. They will make a new style hay tedder, patented by J. M. Collins, and will also do general job work in the line of castings.

OHIO.

The Dayton Car Works, of the Barney & Smith Manufacturing Company, have just completed 500 grain cars for the St. Louis, Kansas City and Northern Railroad. They are building 100 freight cars for the Chicago, Milwaukee and St. Paul and the Boston and New York Air Line. They are also equipping throughout four narrow gauge roads, and are building six sleepers for the Wagner Line on the Michigan Central. The company have certainly no cause for complaint.

The Globe Iron Works, Cleveland, are building a 24x30 engine for the Cleveland Rolling Mill Company that is to be used on the company's Saginaw mining lands.

Homer, Hamilton & Co., of Youngstown, are erecting a hoisting house for the Himrod Furnace Company, the girders and columns of cast iron. The Otis steam hoisting apparatus is to be used.

The King Iron Bridge Company, Cleveland, have recently constructed one of their bridges of four spans of 150 feet each, to be erected at Corning, N. Y., another of five spans of 120 feet each for Cedar Rapids, Mich., also a single span 200 feet long for Black River, N. Y. They have 6400 feet, nearly 1¼ miles of bridges, in course of construction in their works.

The new shaft to replace the one broken in the City Mills of the Chamberlin Company has been ordered, and the mills will be running in 10 or 15 days. The shaft will be 22 feet long, 15 inches in diameter, and will weigh 12,000 pounds, of wrought iron, made at the Cuyahoga Works, at Cleveland.—*Akron Argus.*

The new furnace of the Iron and Steel Company, Ironton, is working on half coke and half Ashland coal, and using native ore, Iron Mountain, Mo., and Crawford county, Mo., ore, one-third each. She is now making 51 tons of iron per day.

The Lake Erie Iron Company is running on a Western order for merchant iron.

The Lake Shore Mill of the Cleveland Rolling Mill Company is running on iron rails for its Cincinnati Southern contract.

INDIANA.

The Nelson Iron Company, of Shoals, after lying idle for over one year past, has made arrangements for an ample supply of capital to carry on the enterprise successfully, and will resume operations within the next two or three weeks. The company design working the furnaces to their fullest capacity.

The Indianapolis Rolling Mill Co. have just finished a contract with the Cincinnati, Hamilton and Indianapolis Road for twenty miles of new rail, and at once closed another contract with the same company for an additional ten miles.

The Generation and Characteristics of Smoke.

Mr. C. W. Williams says:

So much has been said and credited on the subject of the burning and combustion, and even consumption, of smoke; and it has been so often asked, what is smoke? that the subject must needs receive some attention, and we therefore produce the following interesting facts for the benefit of our readers:

Before the characteristics of combustible gases were known, it was natural that all colored vapors, rising from heated bodies, should be called smoke. So soon, however, as the porportion of the several gases were correctly ascertained, through the researches of Davy and Dalton, the misapplication of the term became unpardonable on the part of those who profess to be public instructors on the subject.

The gas from which smoke proceeds, in a furnace or retort is carbureted hydrogen The constituents of this gas have been already described; each atom consisting of two atoms of hydrogen and one of carbon. This latter we are warranted in assuming to be a solid, contained and concealed from view, by, or within the gaseous volume of the hydrogen, since carbon has never yet been produced in the form of a gas, nor hydrogen in that of a solid. It is only when their chemical union, in the form of the coal gas, is broken up, that the carbon becomes visible and tangible. Now this circumstance alone furnishes an unerring test of the difference between gas and smoke; a distinction which, we shall see, is capable of physical proof.

When we see a dark yellow vapor rising from heated coal, as at the mouth of a retort, or from a furnace, or domestic fire, after fresh coal has been thrown on, this color is not occasioned by the presence of carbon, but is caused by the sulphur, tar or earthy impurities which might happen to be in the coal. All these are subsequently separated from the carbureted hydrogen in the purifying process—the gas remaining transparent—so minute are the several atoms of the carbon, and so diffused are they when in connection with the hydrogen. That the solid carbon is there, notwithstanding this transparency, is proved by its subsequent liberation; as when a polished body is thrust into the flame of a candle or gas jet, and brought out with a deposit of the carbon on it. Carbon, in fact, when in chemical union with gaseous matter, is always invisible and intangible.

The separate characteristics of the gas and the smoke will be made clear from the following:

A tin vessel was prepared, in which was placed some small coal, resin and tar, to produce a quick and large development of gas. The lid was removed, and an iron, made red hot, was introduced, and the vessel again close covered. A small tube was then inserted into the side of the vessel, to be blown into, as with a blow pipe, to expel the gas in a stream through a nozzle on the opposite side of the vessel from the blow pipe. That the carbon in this gas is inaccessible, is proved by presenting a sheet of paper to the stream, and, although it may be slightly stained, if there be much tar present, no carbon, however, will be deposited. On this stream of gas (many inches long) being lighted, a lurid flame will be produced, but which, becoming cooled down before it can be sufficiently mixed with the air, produces a large volume of true smoke. Here, then, is exhibited the gas, the flame and the smoke, at the same moment, and in succession, just as they are produced in the furnace—the gas being converted into flame, and the flame into smoke.

Now let us examine the characteristics of each. The carbon in the gas, as already mentioned, is inaccessible, being concealed by or within the atoms of hydrogen respectively, and cannot be separated, or deposited on the paper. On being lighted the hydrogen combines with the oxygen of the air forming steam, which flies off, as already described. The result is, the liberation of the atoms of carbon, either to be converted into carbonic acid (if the heat can be continued), or deposited in the form of the fine lampblack powder, as we see it collected on the wick of the tallow candle. This may be tested by presenting the white paper to it, when a large quantity of this black carbon will be deposited on it. We here see the double error of mistaking smoke for gas, and then assuming that the former can be burned.

It may be well here to notice an error with which we are generally impressed, namely, that the cloudy volume of smoke, as we see it issuing from a chimney, and filling a large space in the atmosphere, is formed of carbonaceous matter.

With equal propriety might we say, if we put a few drops of ink into a glass of clear water, and thus give it a blackened color, that the whole would become a mass of ink. This black cloud is merely the great mass of steam, or watery vapor, formed in the furnace, as already described, but colored by the carbon; and when we consider that no less than half a ton weight of water (in the expanded form of steam) is produced from every ton weight of bituminous coal consumed, we can easily account for the enormous volume and mass of this blackened vapor called smoke, as it appears to our vision, and the palpable error of supposing that this cloud of incombustible matter was capable of being consumed, or converted to the purpose of heat.

Were it not for this mass of steam the carbon would soon fall, as a cloud of black dust; but, being intimately and atomically mixed with the large volume of steam from the furnace, it is carried along by the atmosphere, only differing in color, like the cloud of steam we see issuing from the chimney of a locomotive when in action.

GEORGE GUEUTAL & SON,

39 West 4th St., New York.

IMPORTER OF

Wood Screws, Steel in Sheets,

BAND SAWS. TOOLS FOR BRAZING, &c.

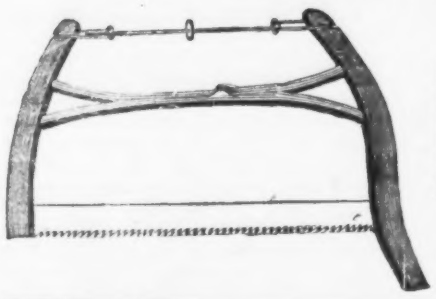
Bed Screws, Pin Hinges, and Wire Nails a Specialty.

H. W. PEACE,

MANUFACTURER OF

Saws of all kinds.

FACTORY, WILLIAMSBURGH, N. Y.



Elliptic Forked Saw Frame.

Patented June 28th, 1870.

The annexed engraving represents my ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any center bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE,
Sole Proprietor & Manufacturer,
VULCAN SAW WORKS.
WILLIAMSBURGH, N. Y.

AMERICAN SAW CO.,

Manufacturers of

Movable Toothed Circular Saws,

PERFORATED CROSS-CUT SAWS

And SOLID SAWS of all kinds. Trenton, N. J.

THE SILVER STEEL

DIAMOND CROSS-CUT SAW.

$1.50 Per Foot.

Patent Secured

PATENT HANDLES AND GAUGE INCLUDED.

THIS new Saw, which is destined to take the place of all Cross-cut Saws in point of **SPEED AND EASE**, is manufactured by **E. C. ATKINS & CO., Indianapolis, Ind.**, who are the

SOLE MANUFACTURERS FOR THE UNITED STATES.

So confident are we that this is the best Cross-cut Saw in the market that we CHALLENGE THE WORLD. Orders promptly filled.

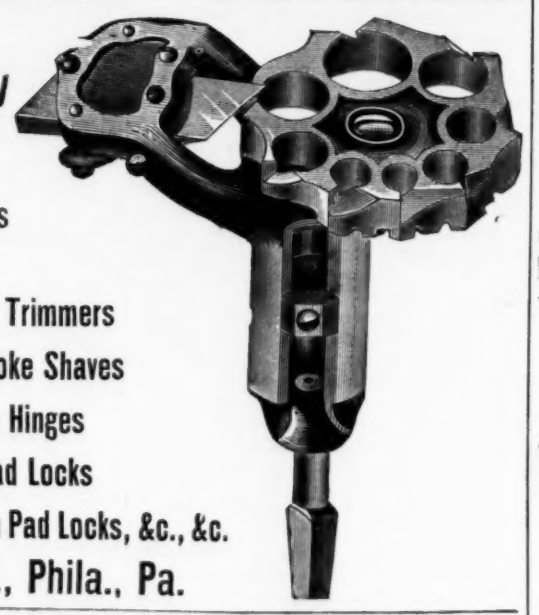
E. C. ATKINS. H. KNIPPENBERG. **E. C. ATKINS & CO.**
Saw Manufacturers and Repairers, Indianapolis, Ind.

Lloyd, Supplee & Walton,

HARDWARE FACTORS.

MANUFACTURERS OF

Bonney's Hollow AUGERS.



Stearn's Hollow Augers and Saw Vises

Bonney's Spoke Trimmers

Double Edge Sooke Shaves

Adjustable Gate Hinges

Scandinavian Pad Locks

Flat Key Brass and Iron Pad Locks, &c., &c.

625 Market St., Phila., Pa.

WILLIAM A. DODGE,

Commission Hardware,

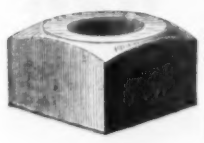
96 Chambers Street, New York City,

AGENT FOR

American File Co.'s Files.
J. M. King & Co.'s Stocks and Dies.
Blake Bros.' Butts, Pulleys, &c.
Greenfield Tool Co.'s Planes.
M. S. Brooks' Screw Eyes, Hooks, &c.
Watson & Co.'s Cotton, Wool & Horse Cards.
Thrall's Try Squares, Bevels and Rules.
J. P. Verree's Hammers and Edge Tools.
Judd & Blakeslee's Snaps, Sash Fasts, &c.
H. Wilkinson's Mincers and Screw Drivers.
Biles & Co.'s Hand and Bench Screws.
T. T. Rhodes' Saw Handles.
American Screw Co.'s Rivets and Screws.
Stillman's Saw Sets.
Dodge's Kentucky Cow Bells.
Holroyd & Co.'s Stocks and Dies.
C. S. Griswold, Augers and Bitts.
Romer & Co., Pad Locks.
Wm. Cleveland, Star Faucets.
Bullock's Babbitt Metal.
Cowles' Hardware Co. Mincers, &c.
Robbins' Cotton Lines.
Amidons' Braces.

NEW HAVEN NUT CO.,

MANUFACTURERS OF



HOT PRESSED NUTS

Of Superior Quality of all sizes, both

HEXAGON & SQUARE,

From ¼ inch to and including 1⅛ inch Bolt.

Factory and Office. - - - - - - WESTVILLE, CONN

Wheeler, Madden & Clemson MFG. CO.,

MIDDLETOWN, - - - - NEW YORK.

Manufacturers of

WARRANTED CAST STEEL

SAWS

Of every description, including

Circular, Shingle, Cross-Cut, Mill, Hand,

WOOD SAWS, Etc., Etc.

E. M. Boynton,

80 Beekman Street,
NEW YORK,

Manufacturer of

Saws of all kinds.

Also Sole Manufacturer of

LIGHTNING SAWS.

Two Direct Cutting Edges, instead of one Scraping point.

Note extra steel and durability over the old **V**, outlined on **M** tooth.

Telegram Dated Oct. 1st, 1874.

STATE FAIR, EASTON, PA.

To HENRY DISSTON & SONS:

Philadelphia, Pa.

I want you to publicly test that challenge on Cross Cut Saws. Name time and place within thirty days. American Institute preferred. E. M. BOYNTON.

E. M. Boynton gave on Wednesday of last week an exhibition of what his Lightning Saw could do at the Pennsylvania State Fair, in which two men sawed through a sound oak log, 16 inches in diameter, in 17 seconds. Mr. Boynton informs us that his export trade is increasing, he having lately made large shipments of his saws to Australia and other distant markets.—*The Iron Age*, Oct. 8, 1874.

For fuller report of this exhibition see the *Easton Morning Dispatch* of Oct. 1st, 1874.

Henry Disston & Sons cannot furnish Lightning Saws. Why do they imitate mine?

J. FLINT,

Manufacturer of

ALL KINDS OF

SAWS

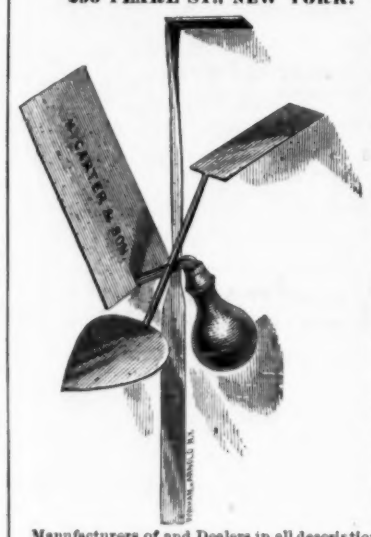
And Plastering Trowels,

ROCHESTER, N. Y.

A large Stock of **Cross Cut Saws** constantly on hand. Orders filled promptly. **Dietrich's Double Handle One Man Cross Cut Saw** made with any kind of tooth desired. Our patent method of grinding Hand Saws makes them superior to any in the market. Send for Illustrated Price List.

H. CARTER,

200 PEARL ST., NEW YORK.



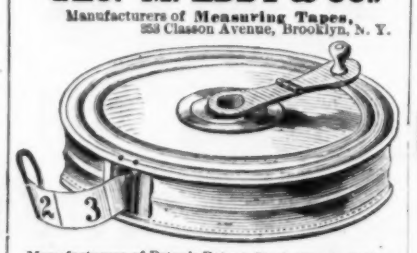
Moulders' and Plasterers' Tools.

Manufacturers of and Dealers in all descriptions of Moulders and Plasterers' Tools, and Dealers in General Hardware, Gilded Copper Weather Vanes.

CARTERS' PATENT CARRIAGE LIFTING JACK, &c.

GEO. M. EDDY & CO.,

Manufacturers of **Measuring Tapes,**
253 Classon Avenue, Brooklyn, N. Y.



Manufacturers of Paine's Patent Steel Standard Measuring Tapes, for Surveyors, Engineers and Mechanics requiring a correct measure of great length according to U. S. Standard. Also of Tape measures for the same trades, Lumbermen, Machinists, Tailors, Shoemakers, Dressmakers &c. Catalogues on application.

JAMES OHLEN

WARRANTED

PATENT ·•· GROUND

SECOND TO NONE

COLUMBUS, O.

make a specialty of the LARGEST SIZES of **Circular Saws**, and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of myself, who has devoted over *twenty years* to the art of saw making.

I am sole proprietor and manufacturer of the celebrated "**Challenge**" **Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

JAMES OHLEN.

VAN WART, SON & CO.

Hardware Commission Merchants,
EXPORTERS AND IMPORTERS,
BIRMINGHAM, - ENGLAND,
Agents,

VAN WART & McCOY,
134 & 136 Duane Street, N. Y.

George H. Gray & Danforth,
48 India Street, Boston.

F. W. TILTON,
17 Old Levee Street, New Orleans.

At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for

John Rimmer & Son's Celebrated Harness and other Needles.

W. CLARK'S GENUINE HORSE CLIPPERS.

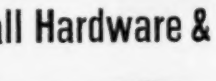
Seydel's "Ashantee" Pocket Hammock

OSCAR IRVING VAN WART & Co.,
FORWARDING AGENTS.
2 South John Street, LIVERPOOL.

JOHN MAXHEIMER,

Patented,
June 3, 1862; April 6, 1869; Dec 23, 1873; Jan. 20, 1874; Dec. 22, 1874.

Manufacturer of



JAPANNED and PATENT EUREKA Bright Metal

BIRD CAGES.

Nos. 247 & 249 Pearl Street
NEW YORK.

LE COUNT'S

Pat. Machinists' Tools.

REDUCED PRICES.

Set Iron Dogs,	⅜ to 2 in.	$ 5·60
" " "	⅜ to 4 in.	13·00
" Steel "	⅜ to 2 in.	6·30
" " "	⅜ to 4 in.	13·00

Iron and Steel Clamps, Die Dogs, Clamp Dogs,

Vise Clamps, Expanding Mandrels, &c.

Send for latest Price Lists to

C. W. LE COUNT,
South Norwalk, Conn.

PEUGEOT FRÈRES,

Valentigney, Doubs, France,

MANUFACTURERS OF

Every description of Saws, Edge Tools, Compasses, Wrenches, Braces, Hammers, New Patent Parallel Hand and Bench Vises, Patent Screw Boxes, Screw Drivers, Bits, Tinmans' Shears, Horse Clippers, &c., &c

COFFEE MILLS,

Doctors, Clock and Telegraph Springs, Rolled Steel for various purposes; as Saws, Watch and Clock Springs, Corsets, Crinolines, &c.

PEUGEOT'S CELEBRATED BAND SAWS.

Works at VALENTIGNEY, HERIMONCOURT, BEAULIEU, &c.

PARIS OFFICES, 2 RUE BERANGER 2.

First Gold Medal, 1819.

For Prices and Illustrated Lists, send to

MR. AD. ARBENZ, St. Nicholas Hotel, NEW YORK

Bemis & Call Hardware & Tool Co.

This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, Case-Hardened throughout, and not only combine all of the superior qualities of our cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a Combination which has no equal.

For Circulars and Price List, address,

BEMIS & CALL HARDWARE & TOOL CO. Springfield, Mass.

Ausable Horse Nail Co.,

MANUFACTURERS OF

HAMMERED,

Hammer Pointed, Polished & Blued

HORSE NAILS,

FROM

BENZON IRON.

Orders promptly filled at lowest market rates.

ABRAHAM BUSSING, Secretary,
35 Chambers Street, New York.

GLOBE NAIL COMPANY,

MANUFACTURERS OF

Pointed, Polished & Finished Horse Shoe Nails

Recommended by over 20,000 Horse Shoers.

All Nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

GLOBE NAIL CO., Boston, Mass.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Oct. 11, 1875.

A variety of interesting occurrences and topics of discussion have marked the week just past, and to chronicle all of those in the space allotted to me in your columns will require brief notice of each. A very interesting excursion was made to the works of the Phœnix Iron Company, at Phœnixville, on the 2d inst., by a large number of railway men and engineers, for the purpose of examining a new form of elevated railway, constructed near that works, and offering, it is said, very positive advantages in the problem of rapid transit. This railway is constructed on the plan of a single rail supplemented by two guide rails parallel to it, the center rail supporting the car. The road is designed to be elevated some fourteen feet above the ground level, and the advantages are that the guide wheels which serve to maintain the equilibrium of the car, being connected with the bearing wheels, maintain a constant position with relation to the bottom rails however much the car may rise or fall on its springs. The short axles of the bearing wheels, with a slight flexibility on the bearings, enable these wheels to adjust themselves to any curve independent of the car, and of each other. By this arrangement all friction of flanges, and danger of mounting the rail is avoided, and by inclining the roadway toward a center the centrifugal force may be neutralized, and very short curves used for turning trains. The roadway is supported on Phœnix columns, of course, placed at distances of fifty feet apart. The engine used on this road is a La France rotary, supplied with steam from twin boilers. The dimensions of this motor are as follows: Width from center to center of wheels is 9 ft. 6 in., and the diameter of the wheels 20 inches. The arrangements of the machinery are peculiar to this type, and require a diagram for explanation, although simple in practice. The working results were pronounced by the engineers present as thoroughly satisfactory. Without the least irregularity of motion on the curve a speed of forty miles an hour can be obtained, the car weighing 11,000 lbs., and the engine 8000 lbs. From the decision of those who examined it critically it is probable that this system of roadway comes nearer to the requirements of the rapid transit question in cities than anything yet presented, and will be added to the list of successful productions emanating from the Phœnix Works.

A new enterprise, brought about by the increasing coastwise and foreign commerce of our city, is that of a new dry dock, originated by Messrs. Cramp & Sons, on the site of their present marine railway, at the foot of Palmer street, on the Delaware River front. The site is 260 feet on the river by 619 feet depth, and has already machine and smith shops, marine railway, etc., the latter capable of hauling out a thousand ton ship. The dimensions of the proposed dry dock will be 462 feet by 111 feet. It will require 4200 piles, and the basin will be, of course, made quite water tight by sheet piling. The pumping capacity, to be supplied by four centrifugal pumps, will have an aggregate water lifting power of 120,000 gallons a minute. The dock will accommodate ships of the largest size, or 450 feet long, being 100 feet longer than the steamships of the American line, and will cost, when completed, not less than $500,000. A large force is at work on it now, and it will be finished as rapidly as possible.

Although pushed for space, I cannot refrain from quoting entire the following curious letter, found this week in removing the pulpit of St. Andrew's Church, which was built in 1823, as it gives the wages of mechanics in Philadelphia half a century since. The orthography indicates a lower scale of education than the oppressed mechanics of the present day would admit. The letter reads as follows:

Saint Andrew's Church was commenced August, the year of our lord one thousand Eight and twenty-two and was consecrated The year of our lord one thousand eight and twenty-three. This church was Bilt for Mr. Bedell which was ead to Bee a very smart man. John Haviland Was arch Etck James Clark and Benman Rubing master house Carpenters when this church was finist there was a Bout thirty house Carpenters a working at it for one dollar a day, and Bricklars was working for one dollar 37½ cents a day Plasters one dollar 25 cts a day Stone Cutters working for one dollar a day and Painters they are working for one dollar a day and we are all glad to gitt that much, a day other mechanists acawrdingly no times are so hard that machanists them that is marred can not aford to live cummfeble Without a goad deal of trouble and a Singley man cannot aford to git marred.

Still we have good markts and cheap and plenty to eat and rents and as many puthy guarles and as cheary ones as the country cay produce John Burton and Charles R. Gaskill. We was work on the pulpitt in this church and we tuck the liberty to Right a few lines and putt them under the Bibel Shelf to let you now how hard times is fore us to gitt along. Now I hope Wen these lines found and open times will Be better that without they are at Present and that Pepel may all become of one mind and worship Lord in Sincerity and truth

Rought and Sind By

JOHN BURTON
CHARLES R. GASKILL

May 11, 1823.

The frequency of new processes for converting cast iron into steel renders them objects of suspicion whatever their possible merits. The ignorant and obtuse descriptions of most of them adds to this difficulty, as witness a letter to one of our dailies describing a new process lately tried at Wilmington, Del., and said to be the invention of Prof. Wm. Field, of that city. The process *per se* seems to consist in the addition of chemicals to ordinary fused pig iron, and to effect the requisite decarbonization and elimination of impurities at once. The product is, of course, pronounced equal to the "best English steel," and tools cast from it direct are first-class. But the cream of the encomium on it is condensed in the following sentence, which says it is: "Far superior to the once far-famed Sanderson & Son's manufacture, and fully equal to the *Blair & Bessemer*, which now take the lead in the market." The *Blair & Bessemer* is good, and we recommend to "Analytical Chemist," who signs the letter, to send samples to each of the members of the new steel firm he quotes.

The *Telegraph* announces that the Allentown Rolling Mill Company will resume work to-day, the men having offered to accept the reduction which was necessary, and their refusal of which has kept the works idle for some time. From Pittsburgh it is reported that the mill men have asked a reduction of one dollar per ton to puddlers, which would make boiling rates $4·50. This the puddlers refuse, and the prospect now is of another lock-out, which, if it comes, will last all winter. The puddling furnaces of Messrs. James Rowland & Co. are idle, because of too high cost of puddling, and refusal of the men to reduce. Philadelphia mill men say that Pittsburgh wages for rollers, heaters, &c., are full thirty per cent. lower than here, which, in part, accounts for their ability to put bars in Eastern markets at 2·4 cts. per lb. Several other works are in difficulty with puddlers, and it is reported that a meeting has been called of the mill owners of this vicinity to consider the wages question. All these troubles tempt to the quotation of the old saw—

"Alas! the perils which do environ
The man who meddles with cold iron."

The annual meeting of the Pennsylvania Steel Co., held during the week, produced a very satisfactory showing to the shareholders. A semi-annual dividend of 6 per cent., 3 per cent. in cash and 3 per cent. in stock, was declared, and the report showed a cash surplus, September 1st, of near half a million dollars, with orders on hand for work sufficient to keep the mill employed some months. The annual inspection of the Pennsylvania Railroad maintenance and transportation departments takes place this week by the General and Division Superintendents, section bosses, etc. The inspectors ride on gondola cars pushed before an engine, and thus have an opportunity of examining the whole track, &c. The four new tracks from Pittsburgh to East Liberty will be taken as samples of those to be extended to Philadelphia, and the inspection, beginning at Pittsburgh, will extend to New York, including all branches. Each member is required to make a written report of condition of track, rails, ties, surface, ditching, policing, &c., and all these reports are critically examined at headquarters.

A trustee's sale of the Hancock Steel and Iron Company, Danville, sometimes known as the National Iron Company, is advertised for January 6, 1876. The property consists of two blast furnaces, two rolling mills and other buildings and improvements, and is sold under mortgage foreclosure, subject to other incumbrances.

The use of steel rails is coming into vogue among our horse roads, one of which will lay in front of the Centennial buildings sectional steel rails with corrugations in the flange to give a better foothold to the horses. The usual advantage of smoothness in riding over iron rails will be thus had in horse cars running on steel rails.

The Pennsylvania Warehousing Company has added a Taylor cotton press to their warehouse, which compresses 60 bales an hour, or one a minute, which is quick work for a machine weighing 250 tons.

Notwithstanding the hard times experienced by ocean steamship lines since January, the American line, it is announced, has paid all expenses, and, since the increase of export trade, is now running at a profit.

A grand incursion of governors, congressmen, editors, divines, bankers and merchants from the West is expected this week to visit and view the Centennial buildings. The various railroad companies deadhead the party; the Pullman Car Company furnish the coaches, and the merchants of our city entertain the visitors while here, and it is to be expected the visit will greatly aid the Centennial cause, which is getting on as well as can be.

Government Tests of Beams, Girders and Columns.

A committee of the United States Board appointed to test iron, steel and other metals has been instructed "to arrange and conduct experiments to determine the laws of resistance of beams, girders and columns to change of form and to fracture."

This committee, desiring to attract to this branch of the inquiry the best talent and experience of the country, in order to reach results of the greatest practical value, solicits the aid and co-operation of all who manufacture or use beams, girders or columns.

Many experiments have been made by the rolling mills engaged in the manufacture of wrought iron beams, the results of which have, doubtless, been carefully recorded and tabulated. The committee earnestly asks copies of such records and tables. Engineers, architects and manufacturers, have also made many experiments upon cast iron beams and riveted wrought iron struts and girders, the results of which are respectfully requested by the committee.

It is desirable that information as full as may be obtainable, with reference to the constitution and manufacture of the iron used in making the pieces tested, should accompany reports of experiments, especially chemical analyses of the metal where these have been carefully made.

The proportions of the various parts of the samples tested should be exactly given; and in all riveted work the size and position of the rivets should be clearly set forth. In all cases the modes of applying and measuring the strains should be given.

Accurate cross sections of the samples tested, drawn to scale, large enough to admit of reliable measurements, will greatly facilitate a proper understanding and analysis of the results.

During the construction of the machinery ordered by the board, the committee desires to collect information as above, and to make such experiments as seem practicable by the use of dead loads. For these experiments, and for those which will be made when the machinery is ready for use, manufacturers are asked to supply such beams, girders and columns as they may desire to have most carefully and impartially tested.

It may be of interest to those who are thus asked to contribute costly articles for destruction by tests, to be informed that the machinery ordered is believed to be the best yet designed for testing purposes, and to possess all the nicety and accuracy attainable with the present knowledge of machine construction. The first machine will have a capacity of 400 tons (800,000 lbs.); and this will be replaced by another of 1000 tons (2,000,000 lbs.) capacity at an early day.

All suggestions as to the kind of tests to be made, and the manner of making them, calculated to give them the greatest practical value, will be gladly received; and for these and all other assistance rendered, proper acknowledgments will be made.

Sample beams, girders or columns, furnished for test should be stamped at one end with a distinguishing number, trade mark and initials of the maker, and forwarded to Col. T. T. S. Laidley, President of the Board, at Watertown Arsenal, Watertown, Massachusetts.

Reports of tests already made, and all other information herein asked for, may be forwarded to the chairman of this committee, at Maywood, Illinois.

WM. SCOY SMITH, C. E., *Chairman,*
Maywood, Ill.
Lieut. Col. Q. A. GILLMORE, U. S. A.,
Army Building, New York City.
Chief-Engineer D. SMITH, U. S. N.,
Washington, D. C.

L. COES'

Genuine Improved Patent

SCREW WRENCHES.

Manufactured by

L. COES & CO.,

Worcester, Mass.

Established in 1839.

Registered March 31, 1874.

We invite the particular attention of the trade to our New Straight Bar Wrench, *widened*, full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact*, that in 1869 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality*. Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

"L. COES & CO."

Warehouse, 97 Chambers St., & 81 Reade Sts., N. Y.

HORACE DURRIE & CO., Sole Agents.

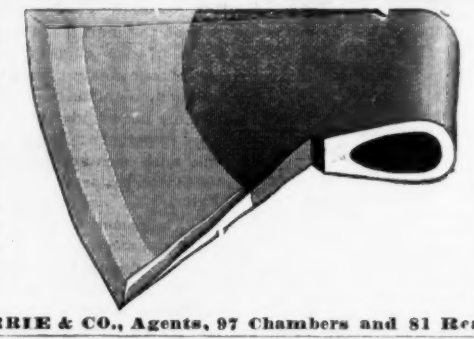
M. H. Jones. A. C. Peck.

M. H. JONES & CO.

COHOES, Albany Co., N. Y.

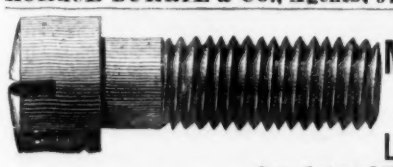
Manufacturers of AXES AND EDGE TOOLS.

All Goods Stamped and Labeled M. H. JONES & CO. unless otherwise ordered.



Sole right to the use of the TEN EYCK AXE MFG. CO.'S Trade Mark.

HORACE DURRIE & CO., Agents, 97 Chambers and 81 Reade Streets, N. Y.



TURNED

MACHINE SCREWS,

One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.

Lvon & Fellows Mfg. Co.,

Cor. 1st and North 3d Streets, Williamsburgh, N. Y.

THE ORIGINAL

TOMLINSON SPRING & AXLE COMPANY,

ESTABLISHED 1852.

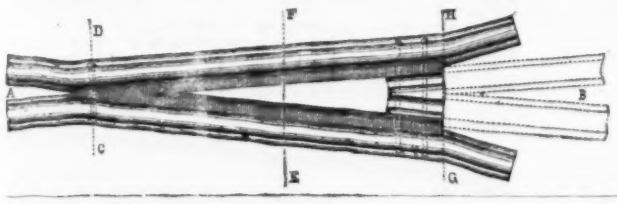
Manufacturers of FIRST CLASS SPRINGS AND AXLES. Also, THE GROOT'S PATENT CROSS SPRING.

RUSSELL TOMLINSON, Prest.
S. R. TOMLINSON, Sec'y and Treas.
C. S. LUPTON, Supt.
} **BRIDGEPORT, CONN.**

All orders promptly executed.

We have no branch. Please send your orders direct.

AMERICAN STEEL FROG COMPANY,



Railroad Track Supplies,

Harrisburg, Pa.

J. M CARPENTER Manufacturer of First-Class TAPS Pawtucket R. I.

CONCORD TRADE (CONCORD USE N.H.) MARK. AXLES

Will Run Easier, carry a Larger Load, and Wear Longer than any other Axle in the Market.

All GENUINE Concord Axles are stamped with above trade mark. Manufactured only by

D. ARTHUR BROWN & CO. Fisherville Concord N. H.

Philadelphia Star Bolt Works.

"STAR"

Carriage and Tire Bolts,

From the Best Brands of

NORWAY IRON.

Trade Mark.

The Celebrated

"STAR" Axle Clip.

All Styles of

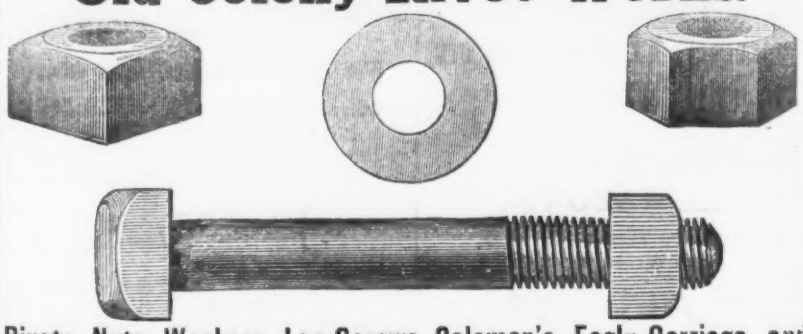
FANCY HEAD BOLTS.

Blank Bolts, Skein Bolts, Square Head Bolts, Plow Bolts, &c., &c., &c.

TOWNSEND, WILSON & HUBBARD, 2301 Cherry St., Philadelphia, Pa

---

Old Colony Rivet Works.



Rivets, Nuts, Washers, Lag Screws, Coleman's Eagle Carriage and Tire Bolts, Axle Clips, Felloe Plates, Shaft Couplings, Stove and Machine Bolts, Driling Machines, Tire Benders,

&c. Full stock constantly on hand. Warehouse, 34 Warren St., N. Y.

ESTABLISHED 1837.

H. M. WENTWORTH & CO.

MANUFACTURERS OF

Carriage Springs & Axles

DAM, No 3 WATER ST, **Gardiner, Me.**

ALL GOODS WARRANTED.

BOAT AND SHIP SPIKES,

Machine and Hand Made.

All Sizes, in stock and for sale by

W. & J. TIEBOUT,

Manufacturers of

Brass, Galvanized & Ship Chandlery Hardware

290 PEARL STREET, NEW YORK.

CARRIAGE BOLTS.

Buy the Best.

Clark's Patent Carriage Bolt.

Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and can not turn in its place.

MANUFACTURED BY

CLARK BROS. & CO., Milldale, Conn.

Also Manufacturers of

Plow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, &c

Send for Illustrated Price List.

HOOPES & TOWNSEND,

Manufacturers of

MACHINE & CAR BOLTS,

Cold Punched Square & Hexagon Nuts,

Washers, Rivets, Wood or Lag Screws, Chain Links, Truck and Car Forgings, Bridge Bolts, Bridge Forgings.

IRONS AND RODS FOR BUILDINGS.

1330 Buttonwood Street. PHILADELPHIA.

RICHMOND CAST STEEL, IRON & BRASS WORKS.

McINTYRE & CO.,

Manufacturers of McINTYRE'S CAST STEEL. Every description of Steel Castings made with promptness. Steel Plow Castings, a specialty. Ninth Street, adjoining Free Bridge, Richmond, Va.

SARGEANT MFG. CO.,

Manufacturers of

Saddlery Hardware

In Gold, Silver, Nickel, Japanned, Lined, & X C.

Sole Manufacturers and Patentees of various Patented Improvements, including Gig Trees, "Imitation Covered Mountings," Wedge Buckles, &c., &c.

75, 77 & 79 Summit St., NEWARK, N. J.

Clement & Hawkes Mfg. Co.,

Manufacturers of

SHOVELS,

Planters' Hoes, Trowels and Machinery.

Northampton, Mass.

Send for Circular and Price List.

The Cheapest and Best Gauge Cock made.

Baltimore Bell & Brass Works,

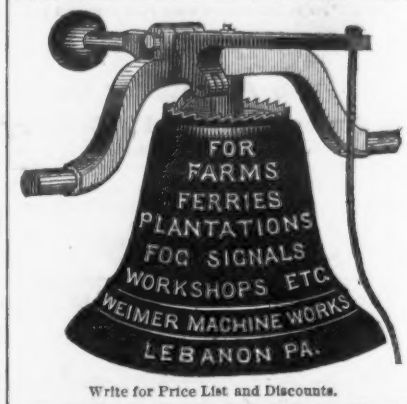
53 & 55 Holliday Street, **Baltimore, Md.,**

Manufacture all kinds of

Brass Work,

And keep on hand a full supply of all

Goods used by Plumbers Steam and Gas Fitters.



Write for Price List and Discounts.

Stretches the wire each way, is tightened with a common wrench, is self-fastening at each half turn of the spindle. Warranted for strength and durability. Sold at hardware stores generally. Byington & Northup, sole manufacturers, Rochelle, Illinois.

Agents: Hibbard & Spencer, Chicago; Excelsior Mfg. Co., St. Louis; John Nazro & Co., Milwaukee; George Fritch, Denver; Nelson & Co., Burlington, Iowa; Marshall Lefferts, Jr., N. Y.; J. S. Brown & Co., Galveston, Texas

---

TUCKER & DORSEY,

MANUFACTURERS,

Indianapolis, Ind.

SHEARS.

To cut iron for chain links and bolts fast. To cut rails square for *re*laying, a specialty. For rolling mills to cut old rails and flats. To cut bar and angle iron at any angle. Center Cutting Shears for hand or power.

Address **W. X. STEVENS,**
East Brookfield, Mass.

GEORGE FOCHT,

Iron Foundry, Machine & Sheet Iron Works,

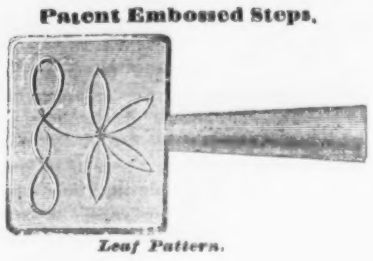
First and Adams Streets, Hoboken, N. J.

Inventor, Patentee and Manufacturer of the Celebrated Self-dumping Hoisting Tubs. Iron, Coal Cars, side or bottom dumping. Iron Dock and Hook Blocks, Iron Sheaves, with or without Steel Friction Rollers for Chain, Wire or Hemp Rope, of every size and description. Iron Box Wheelbarrows, Coal and Coke Barrows, Charging Scoops, etc., for Gas Works, and Sheet Iron Work in general. Improved Mast Shoe and Gaff Socket Castings, and complete Iron Work for Mast and Gaff made to order and put up if desired. Machinery, Building and other Castings on hand and made to order. Illustrated Circular and Price List sent on application.

H. D. SMITH & CO., PLANTSVILLE, CONN.

Established 1850.

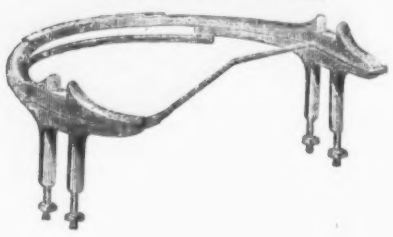
Patent Embossed Steps.



Leaf Pattern.

King Bolt Yokes.

No. 6 Fifth Wheels.

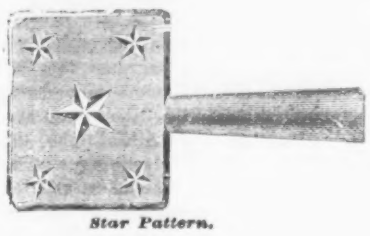


1871 Pattern Shaft Couplings.

Patent Cross Bar Steps.

Upper View.

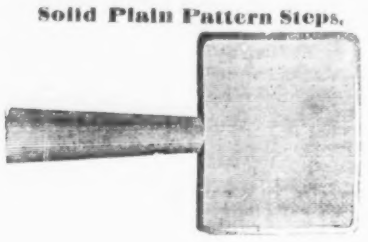
Lower View.



Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.

Solid Plain Pattern Steps.



MANUFACTURERS OF A LARGE VARIETY OF FIRST-CLASS

FORGED CARRIAGE IRONS.

Send for Price List.

---

11 Warren Street, N. Y.

H. B. NEWHALL,

Agent for the Following Companies:

EMMET HAMMER CO.,

Manufacturers of all kinds of

Hammers and Sledges and Contractors' Tools.

H. B. NEWHALL, Agent.

All our goods are branded "E. F. EMMET & CO., Brooklyn, N. Y." None genuine without the above brand.

MACHINIST Ball, Straight and Cross Pene Hammers.
BLACKSMITH, Hand and Riveting Hammers.
" Sledges, Swages, Fullers, Flatters, hot and cold Chisels.
HORSE SHOERS' Turning and Shoeing Hammers, Sledges, Pincers.
MINERS' Striking and Drilling Hammers.
QUARRY Sledges, Macadamizing Hammers.
MASONS' Hammers, Brick Hammers.
BOILERMAKERS' Riveting and Flogging Hammers.
COOPERS' Hammers, Drivers and Stakes.
RAILROAD and **SHIP SPIKE** Mauls, &c., &c.

All kinds of

ANVIL TOOLS and STEEL FORGINGS

Made to order at short notice.

WM. H. HASKELL & CO.,

Pawtucket, R. I.

Manufacturers of

COACH SCREWS (with Gimlet Point),

all kinds of

Machine and Plow Bolts,

FORGED SET SCREWS AND TAP BOLTS.

H. B. NEWHALL, Agent.

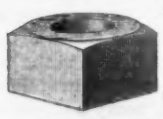
THE READING BOLT AND NUT WORKS,

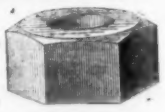
J. H. Sternbergh, Reading, Pa.

Manufacturer of

MACHINE BOLTS.

Bridge, Roof, and Car Bolts.



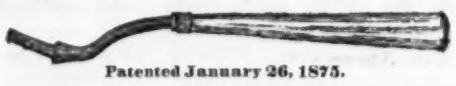


Hot Pressed Nuts,

Washers, Wood or Lag Screws, Refined Bar Iron, &c.

H. B. NEWHALL, Agent, 11 Warren St., N. Y.
S. H. & E. Y. MOORE, Agents, 68 Lake St., Chicago, Ill.
POST & CO., Agents, Cincinnati, Ohio.

CENTENNIAL



Patented January 26, 1875.

STOVE COVER LIFTER.

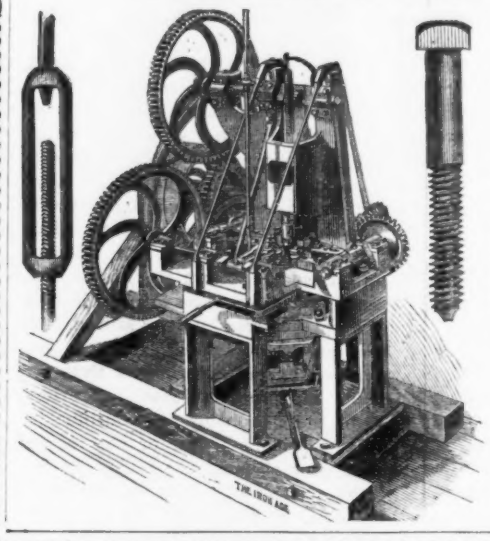
Latest, Neatest, Best.

Tang is made of malleable iron (not liable to break) and is so securely *set* into the handle that it will not pull out. Handle is round, of bright tin, with neat brass ferrule, and is filled with *Plaster Paris* and *Cork*, making it *positively* "Always Cool." Manuf'ctured *only* by

M. H. TARBOX & CO., Lockport, N. Y.

☞ We solicit at *least* your *Sample* order.

AMERICAN BOLT COMPANY,



MANUFACTURE

BOLTS AND NUTS!

Coach or Lag Screws, Washers, Chain Links, Forgings, &c.

OF ALL KINDS AND SIZES, AT SHORT NOTICE.

210 Lawrence St., Lowell, Mass.

JONATHAN HOPE. ROBERT H. BUTCHER. JAMES MINTER

With increased facilities we are now enabled to pay prompt attention to all orders for our **Patent Bolt Heading Machine,** now fully acknowledged the best ever invented. Our Machines will head Bolts from ¼ inch diameter to 1⅜ diameter, and from ½ inch to 48 inches long, or longer if necessary, and almost any description of heads—Square, Hexagon, T head, &c. and properly attended, without changing, will head from 3000 to 5000 per day. We are also prepared to offer for sale our **New Patent Bolt Cutter,** which will cut Bolts from ⅜ inch diameter to 1¼ inclusive. A boy will cut on an average 4000 ¾ inch Bolts per day. Parties wishing first class Bolt Heading Machines or Bolt Cutters, we would respectfully invite to call at our works, where they can at all times see the Machines in operation and judge for themselves. Perfect satisfaction guaranteed in all cases. For references and any other information in regard to the above, apply to the **American Bolt Co., Lowell, Mass.**

O. W. LEONARD, 40 John St., Sole Agent for New York and vicinity.

H. B. NEWHALL,

Agent for
PROVIDENCE TOOL CO.
WM H. HASKELL & CO.
LEWIS, OLIVER & PHILLIPS.
THE READING BOLT & NUT WORKS.
ADAMANTINE FILE WORKS.
PENFIELD BLOCK WORKS.
EMMET HAMMER CO.

DEAN'S New Patent (1873)

Screening Scoop

SHOVEL

atented in United States and England, 1873.

For Coal, Coke and Coal Ashes, and other Substances.

The largest frames are 12 by 18 inches, with seven bars, and are made of the Best Malleable Iron. They are, or can be, wired between bars by an arrangement of holes a quarter of an inch apart, by an ordinary person, to screen any size substance desired. They are warranted to be the most durable and practical Screening Shovel made, or money refunded.

Reference—All New York Gas Companies and Hotels.

☞ Smaller sizes on hand.

Please address orders to

A. SEE & SON,
N. Y. Shovel Works,
1358 Broadway, N. Y.

Price: Largest size $3 per doz., and upwards, according to size of spaces.

The EUREKA "Perfected"

SELF-ADJUSTING

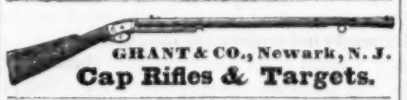
Simplest, Best and Cheapest Clothes Wringer in the World.

Steel Elliptic Springs.

T. J. ALEXANDER,

General Agent and Manager,

Office, Oliver St. cor. High, Boston, Mass.



GRANT & CO., Newark, N. J.

Cap Rifles & Targets.

American Chain Cable Works.

Thirty years' experience in the business.

KENDRICK & RUNKLE, Tren J.

Manufacturers of Cable, Crane, Car Brake, Agricultural, Machine and Harness Chains of every description. Also, sole manufacturers of

KENDRICK'S PATENT IMPROVED TRIPLE COAL MINE SLOPE CHAIN.

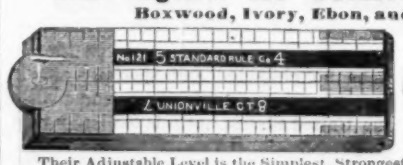
N. B. The highest grades of Crane Chains a specialty

CAST STEEL CORN HOOKS.

The blades are polished and ground to Sharp Cutting Edge ready for use. The handles are of first-class timber with square end, and are firmly strapped and rivetted to the Blade, and are as pronounced by the trade the Best and most durable article in the market. Packed in barrels of seven dozen each.

Sole Agents for STANDARD RULE CO.'S

Boxwood, Ivory, Ebon, and Patent Party Color



RULES,

Adjustable & Non-Adjustable

PLUMBS & LEVELS.

Their Adjustable Level is the Simplest, Strongest and most Reliable one in the market.

The Spirit Glass is in a metallic case of such a shape at each end as to exactly correspond and bear easily upon perfect curve of a recess formed in the stock for its reception. The case is secured at each end to the stock by a strong screw. When the Level requires adjustment the top plate is removed, one screw is loosened and the other driven until required position is reached. The Plumb Glass is arranged on the same principle. The Top Plate protects the adjustment against thoughtless or mischievous persons, the security being well worth the trouble required to remove it when an adjustment is necessary.

Agents for *COBB & DREW'S* Rivets and Tacks. *RIPLEY MFG. CO.*, Mallets, Mouse Traps, Bung Starts, &c. *ATWATER MFG. CO.*, Carriage Hardware, Clips, Couplings, &c. *VALLEY HARDWARE CO.*, Bow Pins, Bull Rings, Saw Setts, &c. *AMERICAN LOCK MFG. CO.*, Store Door Locks, Padlocks, &c. *R. HUMPHREY & CO.*, Spoons, Ferrules and Tin Washers.

MANUFACTURERS OF

Nuts, Washers, Machine, Stove, Carriage, Plow and Agricultural Bolts, &c., &c.

UNION NUT CO., 78 Beekman Street, N. Y.

Factory, UNIONVILLE, CONN.

The Iron Age.

New York, Thursday, October 14, 1875.

DAVID WILLIAMS - *Publisher and Proprietor.*
JAMES C. BAYLES - *Editor.*
JOHN S. KING - - *Business Manager.*

NEW YORK, January 2, 1875.

Until the 1st instant the postage on newspapers was paid by subscribers at the office where the paper was received, the yearly rates on the different editions of *The Iron Age* being as follows: Weekly, cents; Semi-Monthly, 40 cents; Monthly, 24 cents.

Under the provisions of the new postal law, which went into effect on the 1st instant, prepayment at the office of mailing is required, at the rate of two cents per pound for the Weekly, and three cents per pound the Semi-Monthly and Monthly, which will make the postage as follows on the different editions: Weekly, 50 cents; Semi-Monthly, 30 cents; Monthly, 15 cents.

Our rates of subscription will therefore be as follows:

Weekly Edition .....**$4·50 a year.**
Issued every THURSDAY Morning. Contains full Trade Reports for the week, brought up to the close of business on the previous day.

Semi-Monthly Edition.....**$2·30 a year.**
Issued the FIRST AND THIRD THURSDAY of every month. Contains a full Review of the Trade for the previous half month.

Monthly Edition.....**$1·15 a year.**
Issued the FIRST THURSDAY of every month. Contains a full Review of the Trade for the previous month.

To Foreign Countries.

Including Postage.

To	Weekly.	Semi-Monthly.	Monthly.
Canada.....	$4 50	$2 30	$1 15
Cuba.....	5 04	2 52	1 26
Great Britain...	6 08	3 04	1 52
France.....	7 12	3 56	1 78
Germany.....	6 08	3 04	1 52
Prussia.....	6 08	3 04	1 52
Buenos Ayres..	8 16	4 08	2 04
Peru.....	6 08	3 04	1 52
Belgium.....	6 08	3 04	1 52
Mexico.....	8 68	4 34	2 17
Sweden.....	6 08	3 04	1 52
New Zealand...	8 16	4 08	2 04
Brazil.....	8 68	4 34	2 17

ADVERTISING.

One square (12 lines, one inch), one insertion, $2·50; one month, $7·50; three months, $15·00; six months $25·00; one year, $40·00; payable in advance.

All communications should be addressed to

DAVID WILLIAMS, Publisher,
10 Warren Street, New York.

EUROPEAN AGENCY.

CHARLES CHURCHILL & Co., American Merchants, 98 Wilson Street, Finsbury, London, England, will receive subscriptions (all postage prepaid by us) at the following prices in sterling: Great Britain and France, 25/; Germany, Prussia and Belgium, 33/4; Sweden, 50/. They will also accept orders for advertisements, for which they will give prices on application.

City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age:* also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

CONTENTS.

A Last Word for the Centennial.

The success of the Centennial Industrial Exhibition is now assured. It will be international in character, as well as nationally representative; in extent, it will be greater than any previous industrial exhibition of its kind; and its financial success, if not assured, is probable. There will be no lack of means and credit to carry the work forward to a successful consummation, and there will probably be no vacant space. We do not need, therefore, to appeal to the public to aid the enterprise. Subscriptions to the capital stock are still needed, and we would encourage all intending exhibitors to contribute something in this way. The money thus loaned may not be returned with interest, but the principal will probably be refunded in whole or great part after the sale of the property at the close of the exhibition. The question is not now whether the Centennial will be a success. That is assured, as we have said: and the manufacturer with goods suitable for exhibition who has not already made application must consider before it is too late, whether it will pay him to take part. To aid him in forming an intelligent opinion on this subject we will state a few facts which we hope will receive the intelligent consideration of our readers.

The Centennial Exhibition will open on the 10th of May, 1876: it will close on the 10th of November of the same year. The buildings and other property held in trust by the United States Centennial Commission for the stockholders, will then be sold, and the net earnings and profits of the sale will be divided among the stockholders.

No charge will be made for space, nor will an entrance fee be demanded. The expenses to be borne by the exhibitor will be limited to transportation to Philadelphia, which will probably be done at reduced rates by the railroads, and what are defined as terminal charges. The latter include handling and the storage of boxes, shipping cases, &c., during the exhibition. These charges will be moderate, as the Commissioners will make all the arrangements needed to protect the exhibitors against extortion.

Goods must be removed from the building before December 1st, 1876. The reboxing will be done at the expense of the exhibitor, but the cost of handling and delivery to the railroad companies or other carriers will be included in the "terminal charges" before mentioned.

Applications for space will be received up to November 1st 1875. After that date it is probable that no provision can be made for the admission of exhibits. The official catalogues will then be made up, and if any space is subsequently assigned, all such exhibits will have to remain unclassified and uncatalogued. There is, therefore, no time to lose. If your application is not already in, send at once to Mr. A. T. Goshorn, Director General U. S. Centennial Commission, No. 904 Walnut street, Philadelphia, asking for blank form of application. Fill this in, and send it back by return mail.

The space which you will be allowed to occupy will be determined by the officers having this matter in charge. Ask for all the space you can fill to advantage, and all that can be spared will be assigned you.

The buildings will be open for the reception of articles to be exhibited on the 1st of January, 1876. They will be received up to the 31st of March following, after which any space not occupied will revert to the Commissioners, to be utilized or disposed of as they may see fit. The time between April 1st and May 10th will be needed for arrangement, and for those finishing touches which are needed when everything is in place.

Exhibits will be cared for during the exhibition at the expense of the owners. It is probable, however, that the several exhibitors in each group or sub-department will find it to their advantage to divide the expense of employing attendants.

As the Commissioners are not responsible for loss or damage to goods in case of fire, exhibitors would do well to insure their goods. The arrangements for protecting the buildings and their contents from conflagration will be so perfect that it is probable the insurance companies will take risks at exceptionally low rates.

Directions for the shipment of goods, and all other information needed, will be sent with the blank applications for space from the office of the Commission.

It is unnecessary at this time to repeat any part of what we have already said concerning the advantages of exhibiting in the Centennial. We have worked for over two years to impress its importance upon our readers, and we believe not without success. The iron and metal industries of the country will probably be well represented. We deplore the fact that there will be no classified and specially catalogued representation of the ores and coals of the United States, but it is too late now to do anything in the matter beyond what has already been done. The manufacturing industries of the country will no doubt be well represented in all branches, and while we may miss many of the features of special interest which would have been desirable, there is every reason to believe that the Centennial will be a great and creditable success, worthily commemorating the anniversary of our national independence by spreading before the world a record of our progress during the first century of our national life.

Steel Railway Axles.

The articles on steel as a material for railway axles which have lately appeared in these columns, have called out warm responses from several contemporaries, including our esteemed neighbor, the *Railway Gazette*. We do not reply to these articles specifically for several reasons. Newspaper discussions are, at best, unsatisfactory, and seldom render any benefit to the world by elucidating truth. They are, moreover, of but little interest to the readers of newspapers, very few of whom hear both sides of the argument or care much about either. For these reasons we are averse to newspaper controversies—even on so interesting and important a question as the relative merits of iron and steel as a material for railway axles.

What we believe to be the facts respecting railway axles have already been set forth at some length in these columns, but some further remarks on this subject may not be without interest to our readers, most of whom are probably aware that an effort is now making to secure the introduction of steel axles on some of the most important railway lines of the country. If the railroad companies are willing to incur the expense of making the change, no one but the stockholders will be likely to find fault with them for so doing. A good steel axle, homogeneous throughout, and stiff as well as strong, would no doubt render excellent service. The question we have attempted to consider is, whether steel is enough better than iron to make it profitable to incur the heavy expense, and whether an important reform now in progress, which looks to uniformity in the size, weight and quality of the axles used on all roads doing a through traffic, would not be defeated by any such experiment. Experience up to this time has shown that a good iron axle of proper proportions, will carry safely all the load which it is now considered economical or expedient to put upon a pair of cast wheels. This is especially true of the Master Car Builder's standard iron axle, which is so proportioned as to carry the ordinary loads without heating; and incidentally, this has given us abundance of strength. If the present effort to greatly increase the burden of our freight cars without increasing their weight, is successful, and we find that we are able to effect this by better proportioning, etc., it may be an advantage to use the Master Car Builder's standard axle made in steel—provided steel possesses greater stiffness, as well as greater strength. This has not been shown by any experiments thus far made. At present, stiffness is a prime requisite, and it probably will continue to be for a long time to come, for the reason that the journal must necessarily be so large to secure a cool bearing that the body of the axle, if reasonably well proportioned, will give us all the strength we want in any case. A large proportion of breakages of axles results from carelessness on the part of workmen in turning them off. We have examined many hundreds of axles fitted up in a great many establishments in different parts of the country, which were fatally defective in having shoulders with sharp re-entrant angles inside the wheel-fit. We have yet to learn that steel would be any better than iron when as carelessly fitted. We have no doubt that a very large proportion of the axles which break fail from this cause, and that very few fail because the iron is not strong enough, providing the fitting has been done as every good mechanic knows it should be. We have no reason to suppose that steel would be any better treated than iron in this respect.

Another frequent cause of failure in common axles is the springing of the journal, which brings the weight of the load upon the end next to the wheel. The increased wear at this point in time reduces the size of the journal, and a hot box may twist it off or an unusual shock under a heavy load may break it. Up to this time such an accident has not happened to an axle of the Master Car Builders' standard pattern, nor is it likely to until the loads which our axles and wheels are made to carry in average practice are considerably increased.

For these reasons we see no present advantage in substituting steel for iron. When the necessity for a stronger material arises, it will be time enough to discuss the subject further. In the meantime, if any of those interested in the introduction of steel as a material for railway axles, have any new facts of interest and value which they desire to lay before the public, we shall be happy to give them reasonable space in our columns. We have no prejudices against steel for this or any other use, but we do not believe the interests of steel manufacture will be promoted by claiming for that metal advantages over iron which it does not possess.

The Recovery in the Value of Quicksilver.

In an editorial dated July 22d we gave complete statistics of quicksilver production, both abroad and in this country, and some of the reasons why the metal had undergone such an important depreciation in value since the commencement of the year. The large production of California, and the low price at which the Rothschilds were offering Spanish quicksilver in the London market, brought down the value from £11 per flask during the latter part of July to £9 a month later. This low quotation coincided with the unexpected failure of the Bank of California at San Francisco. It was apprehended that many mining enterprises in California and Nevada would be embarrassed by that important failure, and, being hampered in their operations, cause a decreased use of quicksilver for an indefinite time in those localities. But these surmises soon proved to be ill-founded, and instead of a further decline, the metal, immediately after the said failure, showed symptoms of recovery. Both speculators and consumers were reassured regarding the consequences of the bank failure on the Pacific, which proved to have been less ruinous to its own stockholders and the Pacific coast generally than had been feared when first announced. Confidence in the immediate future of the metal, therefore, began to revive at the three leading points—London, New York and San Francisco.

At London a strong speculative undercurrent soon manifested itself, and faith in the metal began to recover. The movement was not fully understood on this side at first, but as London continued to steadily advance, the truth soon became evident. The Rothschilds had just completed a contract with the Spanish government for the leasing of the Almaden mine production for a number of years to come, based on the previous low value. From having done all in their power during months to depress the value of the metal, they promptly became the most powerful supporters of it. Hence the rapid advance we have been witnessing since, which during the month of September carried quicksilver from £9 per flask to £14. 10/.

A great stimulus had, however, been given to production last year by high prices followed by important discoveries in Mexico. Now that the article has resumed an upward tendency, these sources of supply will be taken in hand with renewed vigor, and, unless consumption increases in proportion, a return to £20 and upward per flask does not seem as probable as when the house of Rothschild held the balance of supply under absolute control. But however this may be, consumers at large have had a good opportunity for replenishing supplies at comparatively moderate figures. China, one of the most extensive users of quicksilver, has absorbed unusually large quantities, and so have other mining and manufacturing countries during this interval of depression of six months' duration. At a greatly enhanced figure it is, therefore, more than likely that the demand may slacken for a while, till consumers have reduced their stocks, and till they are able to form a more correct judgment as to the probable supply in the future.

One of the peculiarities connected with quicksilver is its rapid evaporation above a very low temperature, if exposed; hence the amount lost every month in the process of reducing the precious metals would seem to the uninitiated to be fabulous. In Washoe, Virginia City, the great silver center of Nevada, it amounts to about 2000 flasks of 76 pounds per month, being four-fifths of the monthly production of the State of California. It is estimated that 10,000 flasks per month could find a ready sale on the West Coast of America. It is therefore of great interest to the consumers of quicksilver that at this juncture the Stayton mines of California are to be taken in hand by a powerful English company. These mines are situated in San Benito and Merced counties, about 93 miles from San Francisco, being on the coast range, and in the same metalliferous belt as the famous New Almaden and New Idria mines, lying about midway between the two. These mines were commenced in 1872; the one averages 6 per cent. of mercury, and a 7 foot retort, running all last year, turned out about 45 flasks per month. It is now proposed to erect three 20 ton furnaces of improved construction, and assuming that the ore yield but 40 pounds to the ton, and estimating the cost of mining and reducing at 1/6.d, the profit would be nearly £60,000 per annum, or 40 per cent. upon the entire capital of the company; every 1 per cent. extra of metal in the ore would add about £50,000 to the net profits. The ore at Stayton likewise contains antimony as gray ore and oxide, in conjunction with the cinnabar, which would yield a large profit, say £12 to £15 per ton, and from 300 to 400 tons per month could be placed. The production of Europe being limited and under the control of one powerful capitalist, the future of quicksilver, and, to some extent, of the prosperity of silver mining, therefore mainly depends on the capacity of California to indefinitely increase its output. Hence the interest which attaches to any new sources of yield in that State.

Blast Furnaces and Railroads in Great Britain and the United States

On another page we publish an account of an interview with Mr. A. W. Humphreys, shortly after his return from a visit to England. The interest of this interview to our readers lies in the comparisons which Mr. Humphreys draws between British and American practice in the construction and management of blast furnaces. We are glad to see that the opinions which Mr. Humphreys has formed from careful and intelligent observation, agree substantially with those we have from time to time expressed on the same subject. Allowing for differences attributable to climate and other natural conditions, he concludes that the best English practice in blast furnace construction and management is no better than the best American practice. In some minor details they may be ahead, in others we have equal advantage. He also thinks that Great Britain is rapidly declining from her position of industrial supremacy, and that there are no natural obstacles in the way of a successful competition with her—at least so far as regards the manufacture of iron for export.

Thus far we agree with Mr. Humphreys, but with his opinions respecting English railway practice, as compared with American, we are compelled to differ. On this subject he gives merely his impressions, and does not claim to have given the matter much attention; but as his impressions are clearly founded upon a misunderstanding of the relations of English to American railway practice, it is probable that, had he looked a little closer, he would have found that in railway management, as in iron making, we have not as much to learn from English engineers as might appear at first glance. Mr. Humphreys says:

> As collaterally connected with iron, I should like to speak of the railway system of England, and of some points in regard to which Americans might perhaps learn something, but will merely mention one. I saw ore and coke arriving at furnaces on cars containing 9½ tons of material, while the cars themselves were marked as weighing less than 13,000 lbs.; on one road, less than 12,000 lbs. Our own 10 ton cars weigh frequently 18,000 lbs. The saving of dead weight by the English plan seems well worthy of careful study by our railroads.

The English coal and ore wagons mentioned by Mr. Humphreys are doubtless of the four wheeled pattern, and with their load weighed 32,000 lbs., or 8000 lbs. per wheel. To make a fair comparison with American practice, these coke wagons and our own coal cars should be placed side by side. We have four wheel coal cars weighing 6720 lbs. empty, loaded 20,160 lbs., giving a weight of only 5,040 lbs. per wheel. The load for these cars is commonly called 6 tons, but they carry just as much as can be got upon them. In the case we have named the load was 13,440 lbs. That is to say, the car weighs a little more than half as much as the English wagon, and carries two-thirds as much. An eight wheeled coal car weighs 13,440 lbs., carries 22,400 lbs., giving a total weight of 35,840 lbs., or only 4480 lbs. per wheel. The weight of this car, which is by no means an exceptional one, is only 440 lbs. more than that of the coke wagon, yet it carries 11 tons instead of 9½ tons, and has only 4480 lbs. on each wheel, while the English wagon had 8000. This point is a very essential one, as the wear and tear is greatly reduced by making the load per wheel as small as possible. In this case, to use a phrase sometimes heard among railroad men, "the car is light on the rails." The 10 ton freight car can hardly be classed with the English open wagons, inasmuch as the weight of roof and siding and frame is put against the weight of a tarpaulin. It would be impossible in this climate to send freight long distances protected by a tarred canvass only. The English climate is much less rigorous than our own, a fact illustrated by the thin walls of their furnaces and the pig beds in the open air, practices that could not be followed here. Even with our heavy box car, weighing often as much as 17,000 or 18,000 lbs., the weight per wheel does not often come above 4800 lbs., and sometimes is much less. Our platform cars are sometimes quite light, and would compare favorably with the light foreign rolling stock, if weight, tractive force per ton and load per wheel were all taken into consideration. These are facts evidently overlooked by Mr. Humphreys, and we call attention to them merely as showing that, had he viewed the railway system of England as intelligently as he did the iron works of that country, he would probably have found no more reason to be enthusiastic over the one than the other.

The American Institute Fair.

The paleozoic fossil which has come down us us from the remote past labeled "The American Institute," is an antiquity which, for some reasons, we do not feel as proud of

as we might. We do not know that it has ever done much of anything except quarrel every year over the election of officers and hold an annual "fair." These fairs have seldom, if ever, risen to the dignity of industrial exhibitions, and comparing what we see at the Rink to-day with what we remember of the fairs visited by us in early infancy, we should say it was not intended they should. Why they are held at all is something of a mystery, but since they are opened to the public, they are proper subjects of mild and kindly criticism.

On entering the building the visitor receives an impression very similar to that he might be expected to feel on entering a great fancy store, with all the stock displayed to the best advantage; and as the sharp, and often annoying, solicitations of enterprising male and female clerks are not wanting, he is very apt to carry this impression away with him when he goes out again. That this is really the leading idea of the managers of the Institute is evident from a glance at the pamphlet showing the classification of exhibits. For example, we find such startling incongruities as a "Department of Fine Arts and Education," in which we have in the same group lithographs, engravings, architectural drawings, landscape gardening and mechanical and civil engineering. In another group we find account books, apparatus for instruction in science and art and kindergarten drawings. In another we find carpets, frescoes, oil cloths, encaustic tiles, and ornamental mason work. In the "Department of the Dwelling"—an absurd classification—we have such articles in groups as ornamental burglar proof safes and card trays. Safes which are not ornamental go somewhere else. We also see sashes and blinds, water closets, zinc cornices and croquet awnings forming part of a group with door bells, nails, grates, stair frames and mantle pieces. In other groups we have billiard tables and wax flowers; bird cages and embroidery; hair work and back gammon boards; aquaria and crochet work; cigars and skates; toys and bracelets; beeswax, benzine and perfumery; baking powders and disinfectants; stuffed birds and preserved wood; India rubber and earthenware milk pans; yarn, crayons and mucilage; type metal, iron ores, photographic cameras and safety oil cans; looms and printing presses; chains and paint mills; hearses, gunpowder and school furniture; steam fire engines and gas works; burglar alarms and mail bags; harness, road rollers and highway bridges. The absurdity of such a classification is obvious. It is simply impossible to find in the organization of the American Institute, or any other body, men who can intelligently act as judges to determine the relative or comparative merits of articles so widely different. An expert in benzine could not reasonably be expected to have a cultivated nose for perfumery, nor an infallible judgment respecting beeswax; we would not expect one competent to decide upon the merits of billiard tables to be a good judge of wax flowers; while those who know most about school furniture, are not supposed to possess a very intimate acquaintance with gun powder, nor to be anything more than amateurs in hearses. Out of this absurd system has grown the wide-spread dissatisfaction with the decisions of the judges and the awards of the managers of the Institute. Such a classification, which might be well enough for a great show, or bazar, renders it impossible for the Institute to render any intelligent encouragement to art, science or industry. We do not wish to be unduly critical nor unjustly censorious; but it is an unpleasant fact that our annual and only exhibition is conspicuously unworthy of our city. Until we have a better system of classification and grouping, a fairer method of judging and awarding premiums, and less cheap, noisy annoying, catch-penny clap-trap about our American Institute fairs, we cannot wonder that so many of our manufacturers, inventors, artists, importers and others decline to become exhibitors.

The Æsthetics of a Stove.

As the season draws near when, in this climate at least, the stove comes to be regarded as our best friend, and this most necessary article of furniture is reclaimed from the banishment in cellar or garret to which it was ignominiously consigned when the flowers began to bloom last spring, it is natural that the genial warmth which dispells the chill of these autumn evenings should suggest comfortable and philosophical reflections. Even when we rely most upon its cheerful companionship, we are apt to look upon our stove as a necessary evil—a black nuisance, always in the way, and only tolerated because of its indispensible utility. True, when we are called upon to set up the stove, clean the pipe, and make things work as they should, it becomes "a monster of such hideous "mien that, to be hated, needs but to be "seen;" but when the jolly fire begins to roar up the pipe and make things pleasant for the sleepy flies in the cracks of the mantle piece and the vivacious swallows in the chimney, we put some tallow on our bleeding knuckles and are happy once more. Then how we pity our forefathers, who had to carry in back logs and fore sticks and miscellaneous fire wood, while we, more favored mortals, have fulfilled our duty when we have run the gauntlet of the cobwebs in the cellar and brought up a hod of coal. And then, when darkness falls and the fire becomes a comfort, we realize, as we think of the three or four months to come, how important an influence in promoting civilization is the thing which Mr. Dickens was once pleased to speak of as "the red hot, smoking, scorch-"ing devil of a stove."

These somewhat unusual reflections are suggested, not so much by the fact that the cool weather of the past few days has rendered a fire in our editorial stove an indispensable prerequisite of comfort, as by a circular lately sent us by a friend in the stove business. Beside setting forth the innumerable advantages, positive, comparative and superlative, of a new heating stove, it considers the stove from a purely æsthetical standpoint. We quote as follows:

Without a stove what would your family circle be? To it you owe all those delightful things that, in our climate, make home happy. The evening talk, the comforably enjoyed newspaper, the novel, the quiet evening courting, common school education itself; in fact, all business and pleasure to be found in doors during the winter months must be abandoned when we give up the stove. Who could enjoy the family paper in a room at zero or below? How could one keep a family quiet with books if no glowing stove kept a tropical climate within the house? One may hunt the world over for a high type of civilization, but it will be found only in those countries where the stove maintains, during the winter months, a climate which sets at naught the bluster of the storm, and gives the half frozen traveler the cheering rays of heat from a glowing fire pot. Senile old age, which lives only in the memory of the dead past, may recall with a sigh the open fire places and wood fires of the last century, but the next generation will look back to our well lighted parlors, made comfortable by the friendly stove, and bless those giant minds to whose investigations and inventions we are indebted for the stove. Without it, for six months in the year, civilization would cease and we should be reduced to the position of savages, striving to keep warm by means of blankets, retreating to snug corners and spending the greater portion of our time in bed. We should be in the same condition as the Esquimaux, who, when he enters his hut, disrobes himself, and in a state of nature, huddles with his family in the single bed, depending largely on the animal warmth of the inmates to keep the quivering spark of vitality from going out in eternal darkness.

The stove is the last and greatest, because most beneficial, of the creations of industry quickened by the inspiring touch of science. It moves the world. The steamship derives its power from one form of stove, the locomotive from another: but neither of these rank higher in the scale of utility than the ————, the perfected heating stove which we show in the accompanying illustration.

Place it in your parlor or your sitting-room, and it will be from that time as the center of that dearest spot on earth, HOME. Good influences will be strong about it; good manners be cultivated around it; good fellowship be promoted by it: and years hence your children will remember it as the one beautiful center from which radiated the insoluble ties which bound together the family and social circle that made their infant years blessed.

We are sorry to detract from the effect of this beautiful apostrophe by our own more practical thoughts and reflections: but in all seriousness, it must be confessed that the stove has been, and still is, a mighty agent in promoting civilization. The progress of the past fifty years in the art of stove founding, has placed this prime requisite of home comfort within the means even of the very poor, and it has rendered possible the economical utilization of the coal resources of the country, without which we should long ago have suffered seriously from want of fuel, and have been driven to the expedients adopted in other countries less generously provided for by nature which, while they give heat enough to avert suffering, insure very little of that comfort which makes the long winter evenings delightful and profitable in a majority of virtuous American homes. Were it possible to estimate the moral and monetary value of the knowledge gained during winter evenings passed in homes made comfortable by stoves, and which could not well be made comfortable in any other way, it would be found something immense. This knowledge finds daily application in all the industries and occupations of life, it raises the standard of public intelligence, it promotes the growth of virtue and surrounds the rising generation with refining and inspiring influences. In other words, the writer of the circular from which we quote above, is fully justified in regarding the stove from an æsthetical standpoint, and it is doubtful if we shall ever realize, unless retrospectively, to what extent the art of stove founding has contributed to the success of the experiment of free government and to the permanence of the institutions which are its best fruits. No doubt a high civilization is possible without stoves, but when we take into account all the conditions, especially those of climate, which prevail in this country, we realize that the stove is a very important factor in the problem of progress.

What An American Iron Master Saw in England.

The *Tribune* prints the following summary of an interview with Mr. A. W. Humphrey, treasurer of the Stirling Iron and Railway Co. As we are assured by Mr. Humphrey that this is substantially what he said, we print the report in full:

VARIOUS USES OF IRON IN ENGLAND.

Perhaps the first thing interesting to an iron man visiting England is the much more universal use of iron there than in America. From the time he lands at Liverpool, where a recently burned landing stage or pier is rebuilding with iron, he sees it in comparatively common use for many purposes where Americans would employ wood. In many cases the platforms around railway stations are covered with thin blocks of cast iron. It was said in England that even if timber were as cheap as in most of the Eastern States in this country, iron would be in the end the cheaper and better material for any permanent structure in all those parts where stone or brick could not be used.

The varieties of ore in use in England do not vary very much from our own in kind, but the English have very little rich ore of any variety. Their magnitite is inferior in quality and extent to the fine and rich deposits of this ore with which we are familiar in New York, New Jersey and Michigan, and which American iron masters deem almost a necessity for prosperous work. But they have in their Cumberland and Lancashire red hematites perhaps a full compensation, as these are easily smelted, make an excellent iron, and do not wear the furnace badly. On an average the ores used throughout England will not yield probably more than 38 or 40 per cent. of iron. Considerable Spanish ore is used, especially for making iron suitable for conversion into Bessemer steel, and lately it has been taken to Scotland. At some furnaces Irish ore is used as a mixture with local ores, but, on the whole, it is not well spoken of. Coke is the almost universal fuel for smelting iron, and the Durham coke is a wonderfully good fuel, perhaps even better than the Connellsville coke in this country. Anthracite is used scarcely at all, the only deposit in Great Britain being, I believe, a small one in Wales, and this of an inferior kind, crumbling badly as soon as heated. About 2½ tons of raw coal, or 28 or 30 cwt. of coke, compose probably about the average quantity of fuel required to make a ton of pig iron, although considerably less has done the work, as at some of our own furnaces with 21 cwt. of anthracite a ton of iron has been made.

The flux in England, as a rule, is cheap and good; cheap, because it is near the furnace, and hence requires little transportation; and also because it is nearly pure carbonate of lime in good form.

WORKING OF ENGLISH FURNACES.

In the construction of furnaces, there is little, on the whole, varying from the best practice in America. The English furnaces require less raw material, perhaps, than the American, and they have thin walls and dispense with casting houses—the pig beds being in the open air—and also without any covering for the boilers, in most cases. The English heating ovens, as well as boilers, are generally, if not universally, on the ground—I do not remember seeing any exceptions—thus saving masonry necessary to elevate the ovens, as is so generally done in this country. As a rule the furnaces and their necessary appurtenances in England are better planned in their general arrangement than those in the United States, but not better than the most recently constructed works here. At the older furnaces the heating ovens are similar to many of the American—a combustion chamber of fire brick, with cast iron pipes above. But the Whitwell ovens seem to be most in favor at the newly constructed works, as giving a high temperature to the blast very steadily. To heat the blast to 1000° seems to be the general aim; as a matter of fact, about 800° seems to be attained. The blowing engines are generally of the vertical, walking beam, low pressure type, and work economically and well; low pressure engines, for all work, seem to be more common across the Atlantic than here. The raw materials seem to be carefully prepared, and pretty well mixed before being charged.

It seemed to me that the English furnace labor, generally, was rather more efficient than ours, and in some cases, markedly so; at some furnaces an average "output" of two tons of iron per man employed was attained. The furnace proprietors seem very sure that their men are fully as well off as those in America, but this hardly seemed to me to be true, from what the men told me. Of course there is a large part of the men everywhere who never saved anything, but taking the iron workers and colliers as a class, in England, those who wish to save seem unable to do so, and this, in many cases, where the whole family work hard, father, mother and children, all the time; while, aside from the question of money alone, they are apparently conscious of a want of consideration toward them as human beings, and the children grow up lamentably ignorant, except of vice and immorality. The wages of the iron making laborers, on the whole, I was told, are about 20 per cent. higher than before 1870, notwithstanding the reductions that have taken place since 1873.

BRITISH SUPREMACY DECLINING.

Englishmen scout the idea that we can ever supply them with iron, and some say that whenever business revives, and we really want iron in large quantities, we shall be compelled to take it again freely from them, while others admit that the United States is, as a customer, lost to them, and may, indeed, supply some of their customers and colonies. Time will only discover the truth. The fact would seem to be that England has reached her limit as a producer of cheap iron, as, irrespectively of the wages question, she cannot supply herself with cheap, good ore, and coal grows gradually dearer from its lying deeper; while it is estimated that two shillings per ton are added to the cost of coal by the operation of the Mines Regulations act, which was found necessary for the protection of life as the collieries are now worked and must be worked in the future. It was pointed out some years ago by a competent authority here that the supremacy, perhaps the existence, of the English iron trade depended on the continued employment of children, perhaps of women, in many places where Americans never think of so employing them. The government has passed acts restricting the employment of children, and already complaints are beginning to be made that unless these acts are modified, if not repealed, England cannot command sufficient labor cheaply enough to sustain herself in competition with other nations. The superiority England has had over the United States has been in the proximity of her coal and ores and her cheap and abundant labor. These advantages are certainly relatively disappearing.

The complaint of dullness, depression and apprehension is everywhere prevalent in England. About one-third, perhaps more, of the furnaces are out of blast; in some localities fully one-half are out. Yet stocks of iron accumulate, and at those points where returns are made regularly enough to give a just idea of the quantities on hand, nearly twice as much is stocked as at the beginning of the year, and the concessions in price, amounting to about 33 per cent., seem to have no effect in stimulating business. Even Bessemer steel, which was the last to feel the depression, is now in very slack demand. This, perhaps, is due partly to the objections some engineers are making to the employment of any steel in large masses, there being strong indications of a desire, by the best English engineers, to go back to good iron for heavy work.

Our tariff seems to trouble all English iron men very much; not that they "care anything about it personally," but they all seem to agree that they "very much dislike to see so fine a country as the States suffer under such a barbarous system;" and it is impossible to talk long with any Englishman without having this generous solicitude expressed very freely and urgently.

As collaterally connected with iron, I should like to speak of the railway system of England, and of some points in regard to which Americans might perhaps learn something, but will merely mention one. I saw ore and coke arriving at furnaces on cars containing 9½ tons of material, while the cars themselves were marked as weighing less than 13,000 pounds; on one road, less than 12,000 pounds. Our own 10 ton cars weigh frequently 18,000 pounds. The saving of dead weight by the English plan seems well worthy of careful study by our railroads.

Testing Water Pipes and Mains.*

BY ERNST BILHUBER, M. E.

Cast iron pipes are those most in favor for supplying water to cities, and their durability and utility depends upon the care exercised in their manufacture. The testing of them is of great consequence to the public, and is a subject of considerable interest. Water pipes have not only to stand the pressure of the water but sometimes powerful concussions by suddenly stopping the flow.

They are submitted to a proof of a hydraulic pressure of 300 lbs. per square inch, for which purpose they are (after being cleansed from sand and dust) first brought between the jaws of a horizontal press. This press consists of two plates connected by wrought iron bars which form the frame. One of the plates forms the resistance head or abutment, the other has a hole in the center with a female screw thread for the reception of the screw shank, by which the platen is moved back and forth. The face of the platen as well as the resistance head is lined with a layer of wood to serve as a tight packing on both ends of the pipe, which are brought into the press in a horizontal position. Rubber washers may be used for the same purpose, and are commonly employed for smaller pipes, but wood against the end grain answers perfectly well.

When the pipe is thus secured in the press water is pumped in through the resisting head. A smaller pipe is also provided to let off the air from the inside of the pipes. The cock of said air pipe is closed as soon as the pipe is full of water; the pumping by a pressure pump is continued until the gauge shows the required pressure. After this the pipe ought to be struck all over with a hammer to ascertain its power of resistance against concussions caused by hydraulic shocks.

If the pipe is faultless it should not allow the smallest quantity of water to sweat out, nevertheless this is very likely to take place especially at the end of the pipe opposite the bell, where the iron is more porous than in the other parts, because the pipes being cast vertically with bell or hub end downward, all the lighter particles as slags, &c., accumulate on top. The weight of the metal itself compresses the lower parts of the casting, and consequently the same are denser than the upper parts. To equalize these difficulties in casting the so-called gates are enlarged to receive a surplus of metal where most of the lighter particles accumulate.

If the sand should not be dry throughout, gases arise which form blow holes in the casting. When these holes are at the inner or outer surface metal may afterward be run into them and so filling them.

Pipes sweating slightly at a high pressure may be made tight and fit for use by laying them aside for some days, whereby the porous places get tight by oxidation. A supplementary trial by hydraulic pressure will then be necessary.

To control the thickness of the metal of the pipe the same is weighed, and should show the normal weight. It is much safer, however, to measure the thickness at different parts with instruments made for this purpose.

Before being laid in the ground the pipes should be coated inside and outside with tar or coal pitch varnish to preserve them from rusting. To cause the tar to penetrate well, the pipes by means of a crane are immersed in a tank containing the boiling tar, and left in the bath until the metal has taken the same temperature as the bath. The coating must be tenacious when cold, and not brittle or disposed to scale off. If a tank of the required dimensions should be inconvenient the pipes ought to be heated by steam or other means while painting them. But the immersion of the pipes in the boiling fluid is by far the best manner of protecting them against rust, and pipes for a healthy water supply should never be laid in the ground without being coated in the manner above described. In transporting the pipes care should be taken that they do not touch each other, so as to prevent breaking. A second testing may be had before laying the pipes, so as to insure a perfect conduit.

*A paper read before the New York Society of Practical Engineering.

Iron and Copper Shipments from Lake Superior.

The Marquette *Mining Journal* publishes the following statistics of the shipment of iron and copper from the Lake Superior region, from the opening of navigation to September 29, ult.:

IRON ORE.

Mine.	Tons.	Mine.	Tons.
Cleveland	99,571	Rolling Mill	9,417
Lake Superior	70,458	McComber	4,705
Champion	41,159	Edwards	4,008
Washington	9,641	Pittsburgh and	
Republic	109,963	Lake Angeline	2,820
Keystone	530		
Kloman	7,955	Total	379,287
New York	28,000		

PIG IRON.

Bancroft Furnace	3,948	Morgan Furnace	4,795
Carp Furnace	71	Marquette and Pacific Rolling Mill	
Pioneer	3,905	(muck bar)	140
Marquette and Pacific Rolling Mill	8,375		
Michigan Iron Co.	2,935	Total	24,169

ESCANABA.

The following table shows the shipments of iron ore and pig iron from the port of Escanaba for the season, up to and including Wednesday, September 29, 1875:

Mine.	Tons.	Mine.	Tons.
Jackson	43,531	Saginaw	44,506
New York	22,904	Superior	8,474
Cleveland	2,140	South Side Jackson	2,269
Angeline	20,783	Angeline, soft	1,609
Barnum	29,607	Salisbury	2,451
Foster	602	Winthrop	1,632
Rolling Mill	7,827	Goodrich	1,718
Excelsior	2,160		
Champion	301	Total	194,851
Iron Mountain	1,102		

PIG IRON.

Pioneer	9,130
Deer Lake	3,350
Iron Cliffs	200
Total	12,680

L'ANSE.

The following shows the amount, in gross tons, of ore shipments from the port of L'Anse for this season, up to Wednesday, Sept. 29:

Mine.	Tons.
Spurr Mountain	20,937
Michigamme	33,358
Keystone	704
Total	54,999

GRAND ISLAND.

The following are the shipments, in gross tons, from the Grand Island furnaces this season up to September 29, 1875:

Bay Furnace	6,322	Munising Furnace	3,686
Total			10,008

THE DISTRICT.

The following table will show the total shipments, in gross tons, from the Lake Superior iron district for the season of 1875, up to September 29, and those for a corresponding period last year:

IRON ORE.

	1874.	1875.
From Marquette	365,637	379,287
From Escanaba	218,496	194,851
From L'Anse	72,483	54,999
Total	656,586	629,137

PIG IRON

From Marquette	19,604	24,169
From Escanaba	10,313	12,680
From Grand Island	8,698	10,008
Total	38,615	46,857

COPPER.

The following shows the gross shipments of copper from Portage Lake since the opening of navigation:

REFINED COPPER.

	Tons.	Lbs.
Calumet and Hecla	8,874	58
Osceola	335	1,174
Atlantic	148	1,667
Allouez	122	1,953
Franklin	196	979
Pewabic	97	422
Isle Royale	28	506
Central	23	1,058
R. Uren	6	.....
Houghton	8	1,848
S. & D. T. Co.	2	223
Houghton Tribute Co.	5	438
Total	9,999	329

MINERAL.

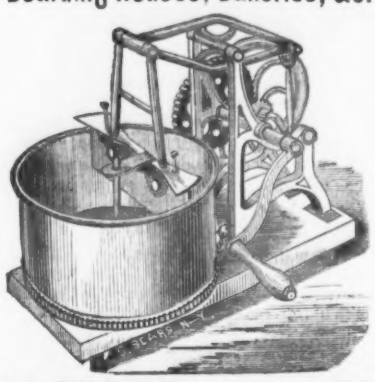
Quincy	1,430	123
Atlantic	491	1,815
Quincy Tribute Co.	6	1,285

—*Northwestern Journal.*

Use of Rail Ends in Blast Furnaces.—Heyrowsky says that there are different methods for using rail ends in the Bessemer process, and that it is acknowledged that 20 to 25 per cent. can be introduced into the Bessemer retort without any objection. Another use has lately been tried with success at the Zeltweg blast furnace, and as Zeltweg possesses a large balance of rail ends this work is very important. The production of the furnace heretofore has been 4600 cwt. of gray Bessemer pig per week; now it is 5400 cwt. This difference of 800 cwt. corresponds exactly to the quantity of rail ends used. In like manner, instead of rail ends, gray and even white cast iron could be used without diminishing the economical results.

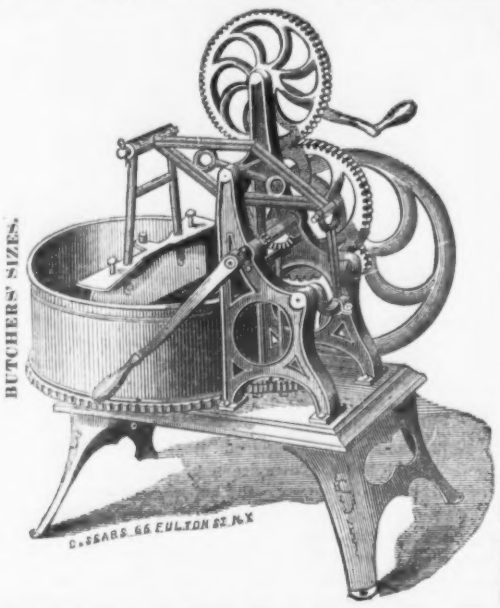
AMERICAN MEAT & VEGETABLE CHOPPER.

(FAMILY SIZES)
For the use of
Families,
Hotels,
Restaurants,
Boarding Houses, Bakeries, &c.



No. 1, Small Family Size.....$3 00
No. 2, Large " " 9 00
No. 2½, Hotel or Bakers' Size..... 12 00
No. 3, Farmers Sausage Cutter..... 15 00

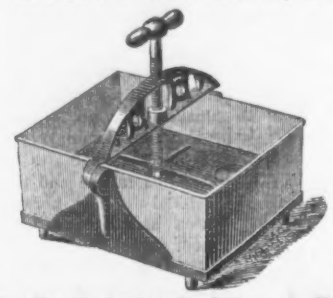
BUTCHERS' SIZES.



No. 4, 15 Inch Block..... $5 00
No. " B " 18 Inch Block..... 6 00
No. 5, 20 Inch Block..... 7 00

STARRETT'S DOMESTIC PRESS

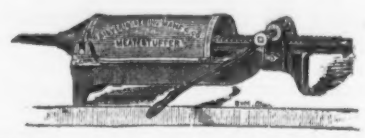
For Pressing
Corned Beef, Boiled Mutton, Tongue, Boned Turkey,
HEAD CHEESE & OTHER MEATS.
And Extracting the Juice from
FRUITS AND BERRIES, for making DOMESTIC WINES, GRAPE and CURRANT JELLIES, &c.



No. 1, Size 6 by 9 and 4 inches deep.....$3 00
No. 2, " 8 by 12 and 5 " 4 00
No. 3, " 10 by 14 and 6 " 5 00

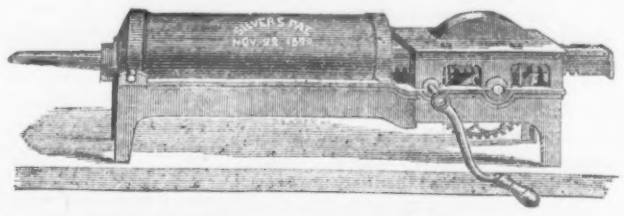
Silver's Patent MEAT STUFFERS.

(FAMILY SIZES.)



No. 1, Capacity 6 lbs.....$6 00
No. 2, " 9 lbs..... 9 00

(BUTCHERS' SIZES.)



No. 3, Capacity 12 lbs.....$12 00
No. 4, " 20 lbs..... 45 00

BAILEY WRINGING MACHINE COMPANY, Agents, 106 Chambers St., N. Y.

White Lead, &c.

John T. Lewis & Bros.,
No. 231 South Front St.,
PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.

TRADE MARK.
MANUFACTURERS OF
PURE WHITE LEAD, RED LEAD, Litharge, Orange Mineral, Linseed Oil
AND PAINTERS' COLORS.

ATLANTIC WHITE LEAD CO. ROBERT COLGATE & WARRANTED PURE

TRADE MARK
The Atlantic White Lead and Linseed Oil Company,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York.

Established A. D., 1777.
WETHERILL & BRO.,
Manufacturers of
White Lead, Red Lead, Litharge & Orange Mineral.
Offices, 31st. St. below Chestnut, PHILADELPHIA.

Brooklyn White Lead Co.

TRADE MARK.
White Lead, Red Lead and Litharge.
89 Maiden Lane, NEW YORK.
FISHER HOWE, Treas.

JOHN JEWETT & SONS
Manufacturers of the well known Brand of
WHITE LEAD.

JEWETT & SONS' PERFECTLY PURE WHITE LEAD.

TRADE MARK.
Also Manufacturers of
LINSEED OIL
182 Front Street NEW YORK

"IRON CLAD PAINT."

We manufacture under "Green's Patents," from the purest and hardest iron ores, the best and cheapest Paint in the world for iron, iron workers, bridge builders, tin roofs, woodwork, and anything where a durable paint is needed.
Send for circular and price list.

EMPIRE IRON CLAD PAINT CO., 30 West Broadway, New York.

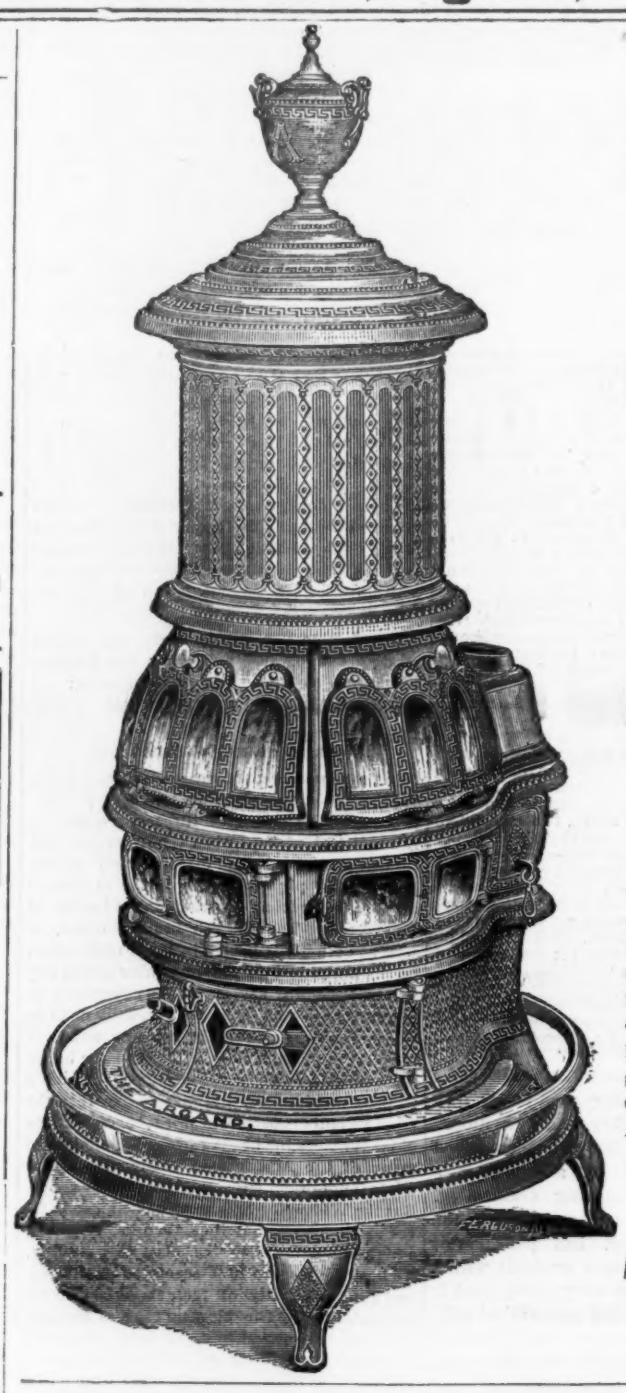
SOMETHING NEW!

"Zero" Stove Cover Lifter.
Patented July 27th, 1875.
Made in one piece from a superior quality of sheet iron, with a perforated cylindrical handle. Its superior advantages over any other style of cover lifter are manifest, as it will not break or bend, keeps always cool, and will fit any stove cover made. Send for Circular.

EAST RIVER SHEET METAL MFG. CO.,
SOLE MANUFACTURERS, 253 Pearl Street, New York.

STAR CHAIN WORKS,
WHITAKER & SKIRM,
Manufacturers of
CHAINS and Chute Nails,
TRENTON, N. J.

Coil Chain.
Trace Chain.
Breast Chain.
Halter Chain.
Cow Ties, &c., &c.
Car Brake and Safety Chain made to any specified length.
Special attention given to Chain for Agricultural Machines.
Rake Chain.
Reel Chain.
Drill Chain.
Stay Chain.
Lock Chain, &c.,&c.



THE ARGAND Base Burner,

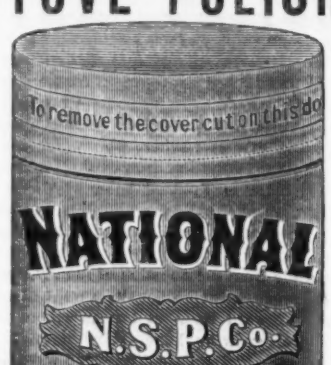
WITH BASE HEATING FLUES,
Patent Clinkerless Grate,
And Illuminated Base,
ARRANGED WITH
Spoor's Parlor Stove Furniture
AND THE
New Silver Plated
Foot Warming Rail.

DON'T BE DECEIVED

As a still further proof of the SUPERIORITY and POPULARITY of the Argand over all others, such a demand was created in one season that manufacturers of base burners all over the country were obliged either to make new stoves or alter over in some way the old ones so as to combine some of the essential points and to have them in appearance as much like the **ARGAND** as possible. Some have copied so closely that a person not fully posted, seeing the Argand at one store, and some other at another, would almost vouch they were both the same stove. BUT DON'T BE DECEIVED. By careful observance you can distinguish the difference. Go on the principle that if anything is worth COPYING the ORIGINAL is always the best, and when you get the Argand you get the original.

PERRY & CO.,
ALBANY, 115 Hudson Avenue.
NEW YORK, 86 Beekman Street.
CHICAGO, 15 & 17 Lake Street.

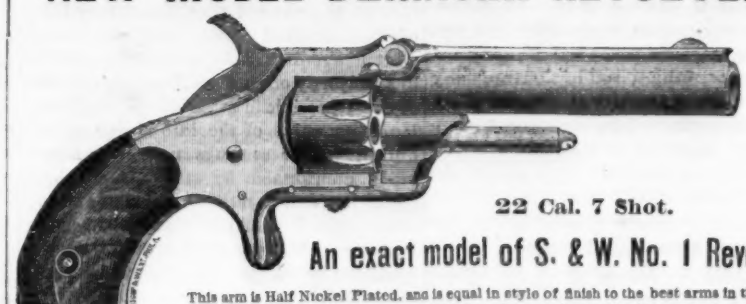
The National STOVE POLISH.



This Stove Polish is a strictly pure article, free from all adulteration. It will polish with the greatest ease, and give a brilliant and durable lustre.

NATIONAL STOVE POLISH CO.,
74 Pearl Street, BUFFALO, N. Y.

NEW MODEL DERINGER REVOLVER.



22 Cal. 7 Shot.
An exact model of S. & W. No. 1 Revolver.
This arm is Half Nickel Plated, and is equal in style of finish to the best arms in the country. Quality of workmanship and material first-class, and guaranteed in every respect.
Price less than any other Hinge Barrel Cartridge Revolver in the market.

Sole Agents, EDWARD K. TRYON, Jr. & CO., Dealers in FIRE ARMS.
No. 19 North Sixth Street and No. 220 North Second Street, PHILADELPHIA.

Coopers' & Turpentine Tools.

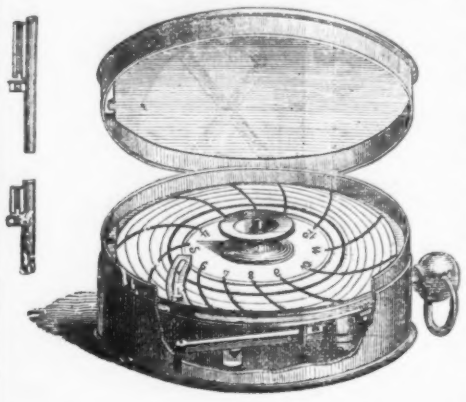
Coopers' Drawing Knives,
Coopers' Adzes and Axes,
Coopers' Froes,
Stocked Croze and Irons,
Coopers' Jointers,
Trass Hoops, all sizes.
Turpentine Hackers,
Turpentine Shavers,
Turpentine Scrapers,
Turpentine Axes,
Turpentine Dippers,
Hacker Stones and Files.

FOR SALE BY
N. WEED, 4 Gold St., N. Y.

Improved Watchmen's Time Detectors.

It is certainly interesting, and to the moralists perhaps sad, to reflect on the great ingenuity and the number of inventions called out by the depravity of man. The burglar proof safe, the electric alarm, the check punch, the conductor's punch, and numerous other inventions owe their origin and existence to the necessity of our being on our guard against that portion of our fellow creatures whose ideas of property and propriety are apt to become confused, and who do not recognize the binding force of the eighth commandment. Inventors of this class of apparatus form, as it were, an unorganized "Society for the Prevention of Crime," and on this account are as much entitled to recognition on the part of the public as their *confreres*, who may be engaged in working out some problem in mechanics, and increasing the applications of the motive forces, which modern science has placed under our command and control.

The employment of night watchmen in large industrial establishments has, of necessity, become well nigh an universal practice. But who is to watch these watchmen, to whom exceedingly valuable interests are daily entrusted, for



a period of from 10 to 12 hours? For after all they are but human, and even if honest, and not disposed to shirk their duties, may succumb to fatigue and sleep, unless stimulated by the consciousness that their movements are observed and recorded with unerring certainty and precision. Answer: The Time Detector. On account of the importance of this little instrument, it has been, of late years, the subject of many improvements, all tending to make it as simple and effective as possible, and we invite the attention of our readers to a brief description of the latest of these, as offered by Messrs. Imhaeuser & Co., of this city.

In the watch represented, six different keys—Nos. 1 to 6—mark a hole in circles 1, 2, 3, 4, 5, 6, on a paper disk, which is slowly revolving; six other combination keys, Nos. 7 to 12, make a double mark, but in the same circles as before, so that the one does not interfere with the other. These marks consist of small holes made in the paper, which is renewed every night, and they are punched by springs operated by the different keys, while the keys are kept in different parts of the building, to be visited by the watchman.

These keys are fastened within or outside of the buildings, on the beat of the watchman, while the latter, before entering upon his duties in the evening, receives the watch, which is provided with a fresh paper dial, wound up and locked. He makes his rounds, and visits the different stations, according to the instructions received from his employer. In making his rounds and arriving at a station, the watchman inserts the key into the key hole on the side of the watch, and, while doing this, a hole or a figure will be pricked in the dial of the watch at exactly the minute the hand on the watch shows the time. On delivering the watch in the morning to the person in charge, the latter, on opening the same, can see at a glance how often and when the rounds have been made during the night; whether every station has been visited or any neglected at each round, and what space of time elapsed between the different visits, etc.—in short, it tells the history of the night's doings: of the vigilance or carelessness of the watchman.

These instruments have already found their way into a large number of factories and mills, whose owners certify to their merits.

Further information may be obtained by applying to Messrs. Imhaeuser & Co., No. 212 Broadway, New York. P. O. box, 4798.

Crampton's Revolving Furnace.

We have from time to time laid before our readers statements of the good results obtained by Mr. Crampton with his revolving puddling furnace, combined with the use of powdered fuel. Prolonged experience has shown that all kinds of iron can be puddled by it, and that with the water cooling apparatus adopted, all the mechanical difficulties anticipated have been entirely overcome, while, after long continued working, it is proved that the furnace itself withstands the excessive heat and costs but little for repairs.

In addition, however, to the mechanical details of the system, the method of heating by the use of powdered fuel is an important feature, as it has been shown that puddling and all other operations requiring great heat can be performed with it entirely without oxidation. Oxidation is not only prevented by the control possessed over the air and the carbon, but another source of oxidation, inherent in all other furnaces, is avoided, viz., that resulting from the decomposition of the water contained in the coal and air, the oxygen of which oxidizes the iron. Mr. Crampton employing extremely fine particles of carbon mixed with the flame, the oxygen of the water, in becoming decomposed, is converted into carbonic acid or carbonic oxide, leaving a neutral flame.

There is little doubt that puddled steel can be made in the Crampton furnace with great economy and regularity, and that the system offers advantages for the production of wrought iron direct from the ores. Many of the leading iron masters in this country have themselves superintended the puddling in Mr. Crampton's furnace of their own pig into wrought iron, and have watched with interest the working of the mechanical details, while foreign engineers have visited England to investigate the system with the result of introducing it in their own establishments; furnaces are now being erected in France, Belgium and Austria, and arrangements are in course of completion for their construction in America, Russia, Sweden, Spain and Italy.

The Indian government has recently requested Mr. Crampton to test the iron and coal sent from India, and there is no doubt of their being adapted for mechanical puddling, judging from the good results obtained from the iron supplied by a private firm. It is an interesting fact, which we have already pointed out, that hematite, as well as pig iron in large quantities from Sweden, Derbyshire, Staffordshire, Northamptonshire, Cleveland, and also from the Low Moor district, have been treated in the furnace, and that all of them have produced wrought iron of superior qualities from which steel could be made, the iron produced from the best Swedish pig not being superior to that made from the common Cleveland pig in the Crampton furnace, while the cast steel made from the Cleveland metal has proved itself to be equal to 14s-h-class steel made from Swedish wrought iron. According to the latest results obtained from Cleveland pig treated in the Crampton furnace, an average of 99·207 percent. of metallic iron was obtained, there being ·517 per cent. of carbon. From another series of analyses, the impurities remaining in the iron were:

Silicon	·136
Phosphorus	·196
Sluphur	·079
Total	·461 per cent.

These remarkable figures require no comment.

All these results, which go beyond the range of experiments, have been carried out in the daily working of the furnace, in charges of 7 cwt. to 10 cwt. each, solid blooms of 1 ton weight being occasionally made. The question of manipulating large as well as small pieces has also been satisfactorily solved, blooms of 10 cwt. or 12 cwt. being cut up at the same heat into pieces weighing 1 cwt. each, beside which homogeneous plates of 10 cwt. made from cast iron containing ⅞ per cent. of phosphorus have been make for the Admiralty, and proved by them to be equal to the best English brands. Armor bolts and solid homogeneous masses for forgings are also being made for the government.

The furnaces at the Carlton Iron Works, altered from the Danks to the Crampton system, although not complete in all their details, are working satisfactorily with inferior irons, and those nearly completed at Messrs. Fox, Head & Co.'s, comprising, as they do, all Mr. Crampton's improvements, will certainly give results at least as good.

At the works of Dr. Strousberg, near Prague, arrangements are now being made on a very comprehensive scale, and this, when completed in January next, will form one of the largest puddling establishments in Europe. The main building, which is already finished, is in one span 92 ft. wide, about 200 ft. long and 24 feet high to the tie beams; it will contain 16 revolving puddling furnaces, placed in two rows; these will produce 1200 tons per week. They will be supplied with melted metal from four cupolas placed at one end close to the main railway, supplying the works with material, at which end also the coal will be ground. Six 8 ton hammers and the reheating furnaces will be placed at the other end of the building, and a narrow gauge railway system will be laid to connect the cupolas with all the furnaces and steam hammers. Four 3-ton locomotives, to each of which is attached a crane, will convey the melted metal to the furnaces as well as the blooms to the hammers, so that the use of trolleys will be avoided, and the fettling, as well as the cinder from the furnaces, will also be moved with these little engines. No cranes are attached to the furnaces themselves, and there will be no cast iron floor plates employed, as all material will be carried on the fixed rails. The whole system is arranged to work one ton charges, or even more if required, and two men will be able to manage each furnace without assistance either for charging or discharging.

In the center of the building, above the beams, are placed the air and coal chambers for supplying the whole of the furnaces to which the ground coal is conveyed by screws from the grinding apparatus at one end of the building, the air being also conveyed by pipes to the central chamber from fans at the end. Coal feeders and air injectors, one for each furnace, are placed round these central reservoirs, with levers for each furnace, so that the attendants can regulate the air and fuel at will.

Arrangements are now being made for carrying out the plan proposed by Mr. Crampton in 1873, for making cast steel in his revolving furnace. Experiments made some time since with a fixed bath showed that the necessary temperature could be obtained by the use of the powdered fuel, and his puddling furnace, as it now stands, can be changed into a steel melting furnace by lining it with sand.

Mr. Crampton has quietly and perseveringly brought his system to its present stage of perfection, and now the doubts which at one period were expressed as to the probability of constructing a mechanical puddling machine adapted for use in ordinary iron works, and worked by unskilled men, have been removed.

It is quite certain that no system of mechanical puddling that requires careful watching and skilled management, can permanently succeed, however good experimental results may be. Mr. Crampton has, we think, clearly shown that his system is free from these fatal defects.—*Engineering.*

Ingot Molds for Steel Rail Ingots.*

By Mr. W. Hackney, B.Sc., A.I.C.E., Westminster.

In casting steel ingots, the molds used are exposed to what are probably more sudden and more violent alterations of temperature than those to which articles of cast iron are subjected in any other operation in the arts. When an ingot mold is filled with liquid steel, the inside surface becomes at once strongly heated, though it is protected, as far as possible, from the direct action of the metal, by a wash of plumbago, or clay, or lime; and the heat gradually penetrates the substance of the mold until, in a few minutes, the inner half, or more, of its thickness is red hot, while the outside is still comparatively cool. The effect of this is, that the metal becomes intensely strained by unequal expansion, the inner part being in a state of compression and the outside in tension; and if the mold is not free from flaws, and made of a soft graphitic quality of cast iron, it cracks. In fact, in spite of every care taken in the selection of suitable material and in the processes of manufacture, by far the larger proportion of the rail ingot molds must give way by cracking, rather than by direct wear, after having stood a smaller or a greater number of casts. As the expense of molds is far from being an unimportant item in the cost of making steel rails, an attempt to point out some of the causes of their rapid failure, and to indicate by what alterations in their design they may be made to last better, may be of some interest to the members of this Institute.

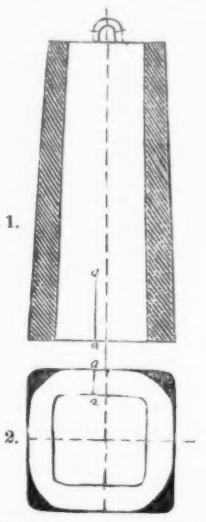


Fig. 1.

Fig. 2.

Rail ingot molds are now always made square or rectangular in section, with the corners only slightly bevelled or rounded, in order that, in drawing the ingot down into a bloom, as much work may be put upon the corners as on the rest of the mass, or, in other words, that they may be equally compressed; whereas, in cogging or hammering down cylindrical or rather slightly conical ingots, such as were tried in the early days of steel rail making (with the idea that circular ingot molds would stand better than square molds), the corners of the bloom produced are but little compressed, if indeed the hammer touches them at all; and unless the metal is very sound, and free from red-shortness, they are apt to tear across here and there, causing flaws, that show as cracks in the finished rail, or that have to be chipped out. The molds commonly used are either cast in one piece (Figs. 1 to 6), in the form of a frustrum of an elongated hollow pyramid, open at both ends, and slightly smaller at the top than at the bottom, or they are made in two parts, bolted or clamped together (Figs. 7 and 8).

A somewhat old-fashioned mold of the former class is shown by Figs. 1 and 2. When such a mold cracks in use, the crack is invariably in the middle of one of the flat sides (*a a* in the drawing), starting from the bottom and running vertically upward. The reason of this is, that the middle of each side, as shown by the plan Fig. 2, is the part which is most strongly

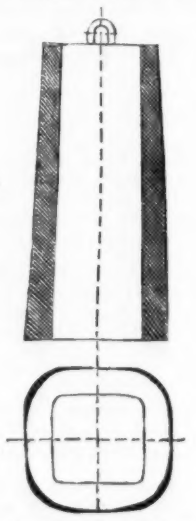


Fig. 3.

Fig. 4.

heated by the ingot inside as toward the corners there is less bulk of hot metal, and more cooling surface to carry off its heat; and yet this is just the part where the thickness is least; so that when the ingot has stood in the mold for five or ten minutes, and the latter has become heated through, the middle of each face is red hot while the corners remain black. Thus while the sides are expanded and weakened by heat, the corners, particularly toward the outside, are nearly cool, and refuse to yield to the expansion; so that the mold is subjected to great strain, tending to make the corners curl outward, away from each other, and to crack or tear it open toward the middle of one or more of the sides; and such a mold, as already mentioned, always does crack, in just this way, after a very small number of casts.

A modern Sheffield mold is shown by Figs. 3 and 4. In this the thickness of the metal is equal all round; and the alteration, as tending to make the molds last longer, and to render them less liable to crack, has been a marked improvement; but it has not been carried far enough. When a mold of this shape has become heated through, by a hot ingot within it, the middle of each side is still hotter than the corners, though less markedly so than the mold first described. Thus the corners, even in this mold, are less expanded by the heat of the ingot than the sides, so that their tendency is still to curl outward, and, when the mold cracks, it cracks most frequently up the middle of one side. In the form of ingot mold adopted by the writer, the object in view was so to adjust the thickness, at different parts of the circumference, that the expansion of the metal, when heated, should be equal all round. Such a mold is shown by Figs. 5 and 6, and one proof that its form is nearly correct is that, when it becomes heated to redness by an ingot of steel cast in it, the temperature of the outside, in so far as this can be judged of by the eye, is equal all round. There is thus no tendency for the corners any more than for the sides to curl outward; and when the mold does crack—for the much more rapid heating of the inside than of the outside in any case puts a great strain on it—the crack is either irregular in its direction, or it occurs as often in the corner as in the side. Indeed, the place in which the molds are found most frequently to crack, is even a better guide than the uniform red heat acquired by the outside, in adjusting correctly, in the case of each pattern, the relative thickness of metal in the corners and in the sides.

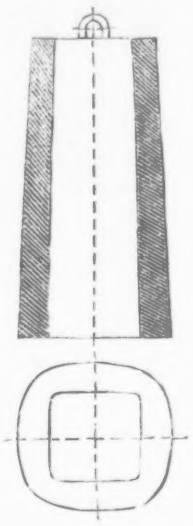


Fig. 5.

Fig. 6.

In practice, molds designed on this principle have given very satisfactory results. The writer has only had experience of them as made of

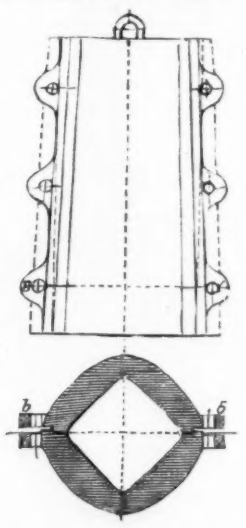


Fig. 7.

Fig. 8.

good No. 1 pig, it is true, but by molders not specially trained to the work; and they were thus very inferior in finish and smoothness to those turned out by first-class Sheffield firms. While, however, good Sheffield molds, from one of the best makers, stood with great regularity, an average of 70 casts each, in casting ingots of Siemens steel of 10 cwt. to 12 cwt., and ultimately gave way by cracking in the side, many home made molds of the improved shape, stood 120, 140, or 160 casts; though some, from the use of unsuitable metal, from roughness inside, or from other defects, had to be thrown out sooner.

Ordinary ingot molds, cast all in one piece are not, however, at the best so durable as to be really satisfactory, and many attempts have been made to introduce some radically improved type. The defects to be guarded against are of opposite kinds, and the metal used is thus required to be of a somewhat intermediate character; the more soft and graphitic it is the better the mold yields to the strain caused by unequal heating throughout its mass, and hence the less liable it is to crack; and in the case of ordinary solid molds the liability to crack is the great evil to be avoided. At the same time, such soft metal is more readily roughened and cut into holes by the melted steel, and in casting molds from it there is a greater risk of flaws or hollow places on the inside surface, caused by the quantity of graphite that floats on the melted metal; any such flaws or roughness that cannot be chipped out making the mold useless, as the ingot will stick in it at the first cast. If the liability to crack could be diminished, ingot molds might be made of less gray iron, which would be at the same time more easy to cast with a clean, smooth surface, and less readily cut, or roughened, in use, by the liquid steel.

The plan that has been most extensively tried is to make each mold, as already mentioned, in two parts, planed at the joint and bolted or clamped together (Fig. 7 and 8); and this is so far successful that such molds, if made of good No. 3 pig iron, are not more liable to crack than solid molds made of the grayest No. 1; while they are more easily cast, and remain longer smooth; and if made of the same metal as is generally used for solid molds, and with the same care, they may be regarded as almost safe from the risk of cracking. Such molds hold forth the promise, also, of other advantages, such as that parallel sided ingots may be cast in them, and that an ingot sticking in the mold may be readily got out, by slackening the bolts or clamps that hold the two parts together; but their use brings with it new difficulties, that do not seem to have been yet quite satisfactorily overcome.

When a split mold, such as is shown in section by Fig. 8—a mold made in two parts, bolted together through flanges or lugs at the sides—is filled with liquid steel, and the inside is thus strongly and rapidly heated, and expands more than the outside, the mold tends to assume a shape approaching that shown, in an exaggerated form, by Fig. 9; but the bolts holding the two parts together resist any such separation of the flanges; and the metal of the mold, being forcibly prevented from assuming the form that expansion seeks to give it, takes a permanent set, or "warps," as cast iron readily does at a red heat; the flanges and the outer edges of the joint becoming bent toward each other, so that when the mold has cooled down again the joint is more open toward the inside than it was before casting (Fig. 10), the flanges are closer together and the bolts more or less loose. This action is repeated each time that the mold is filled, and the warping or permanent set increases, more especially after every tightening of the bolts, until the joint becomes so open that steel runs into it, forming a fin on the side of the ingot. The fin then forms, at each cast, a new fulcrum for the further straining of the mold, and its thickness gradually increases until the mold becomes unfit for use, and must be thrown aside or the joint replaned.

That the tendency of split molds to open at the joint is due to warping, and not to the burning or wearing away of the angles between the joint faces and the inside of the mold, is shown by the fact that even when a joint has opened fully a quarter of an inch, the angles are still sharp, and the planed faces as smooth as when

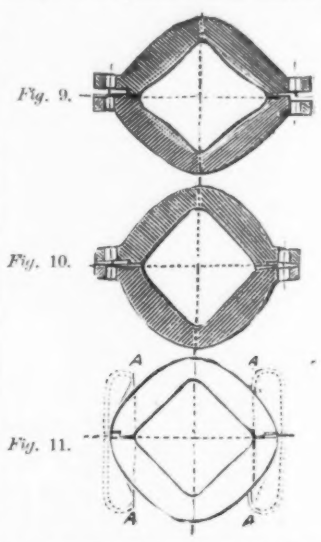


Fig. 9.

Fig. 10.

Fig. 11.

they left the machine. The plan of shaping the joint, as shown by Fig. 8, so that the two parts may touch only along the inner edge, though it is advantageous, does not entirely prevent the formation of fins on the ingots, as the extent to which the joint tends to open is not equal from end to end, being greatest opposite to each bolt hole, and diminishing to nothing above the hight to which the mold is generally filled; and the joint faces thus become twisted so as to stand open at some parts, while touching at others.

The opening of the joint being caused by the strain that is put on the mold when heated, by fixing the parts of it together by rigid bolts, which pass through lugs or flanges, *b b* (Figs. 7 and 8), and resist the tendency of these flanges to separate, the remedy is clearly to hold it together in such a way that, while the parts are kept in position with sufficient firmness, the strain to which they are subjected, by resistance to their deformation when the inside becomes heated, may be either diminished or removed. One plan of diminishing this strain is to fit strong springs, or spring washers, under the heads of the bolts, so that these may yield, to some extent, when the mold is expanded by heat. This arrangement has been introduced in practice pretty extensively, and may be regarded as fairly on its trial. It diminishes the strain on the mold very considerably, and in so far reduces the tendency to open at the joint; just as the strain is reduced, in using ordinary bolts, by keeping these as close as possible to the inner edge of the joint. As the springs used are necessarily very strong, the remedy can only, however, be partial; to make it complete, to hold the halves of the mold together, so that while they are quite firm in ordinary handling, no resistance may be offered to their change of form under the influence of unequal heating, the lines of strain, joining the points by which they are gripped together (A A, A A, Fig. 11) must be brought within the inner edges of the joints, as these edges are the lines on which the parts of the mold hinge in expanding. This might be done by clamping the parts together, either by spring clips, driven on from the top, as shown by dotted lines in Fig. 11, or by rings dropped over the mold and wedged up, the plan commonly adopted in the case of the small molds used for tool steel.

By the adoption of some such plan it is probable that the joints of split molds for heavy rail ingots may be maintained quite close, until they are otherwise worn out, or at least that the tendency to open may be so much diminished as to render such molds preferable, for ordinary use, to those of the more common form. They would, perhaps, still show some tendency to warp or twist irregularly, but any such warping might be prevented from causing the opening of the joints, when once the constant tendency to make these gape was avoided, by merely keeping the parts clamped firmly together from top to bottom, as cast iron at a red heat yields readily under pressure. The halves of the molds for tool steel ingots are, for instance, fitted to each other, without planing, by merely clamping them together firmly while at a red heat.

In designing split molds, the relative thickness of metal at the corners and in the sides should be adjusted with the same care as in the case of solid molds, and projecting ribs or flanges should be avoided, in order that, when the mold becomes heated, it may be as nearly as possible equally hot all round, and may be free to expand without strain. The importance of this point was illustrated by the failure of some of the first split molds that the writer made. In these the flanges for bolting the halves together were carried continuously from top to bottom, as shown by the dotted lines in Fig. 7, instead of being merely a series of separate lugs; and the result was, as should have been foreseen, that since the flanges remained cool, and did not expand, when the mold was filled with steel, while the body of the mold became red hot, every half mold so made soon cracked, some across the flange and some up the middle.

* Paper read before the Iron and Steel Institute at Manchester.

Boudren's Patent Adjustable Combination Lamp.

This lamp, now rapidly becoming popular wherever it is known, is built by the White Manufacturing Company, of Bridgeport, Conn., and was invented and perfected by their superintendent, Mr. Boudren. Among the great variety of lamps manufactured, many of them are adapted to certain purposes only, hence, a lamp which is susceptible of adaptation to all uses is certainly worthy the attention of the public. This advantage is claimed for this lamp, and from the numerous testimonials as

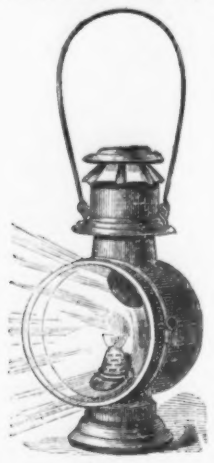


Fig. 1.

to its merits, we do not doubt that its claim is well supported. It is so constructed that it will not go out from the jolting of a carriage, from being turned on its side, or from any similar cause. It is furnished with a reflector, similar in construction to that used on the head light of a locomotive, and is capable of throw-

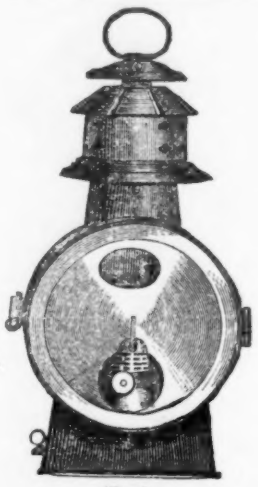


Fig. 2.

Fig. 3.

ing a strong light a distance of one hundred and fifty feet. The same lamp may be used for a great number of purposes, and is adapted to all of them by special fixtures, furnished with the lamp.

Fig. 1 shows it as an ordinary hand lantern. In Fig. 2 the same lamp is shown as in Fig. 1, as a hand lantern, but which is also fitted with

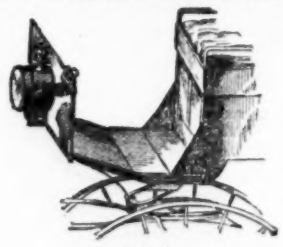


Fig. 4.

an adjustable clamp as seen in Fig. 3, for fastening to the leather dash of a carriage, as seen in position in Fig. 4. By means of other fixtures it may be attached to the bow of the carriage above the head, or to the post or any other part desired, and in all these positions, no matter what may be the angle of the support, the lamp may be fastened in an upright position, or at any desired angle. Instantly this may be detached and used as a bracket lamp for the stable, porch or hall, or again as a hand lamp. Fig. 5 represents this lamp with a cover, that may be opened or closed without noise, for which reason it is especially desirable for hunters, as it may be attached to a support, so arranged as to leave the head, arms and body free to be used for other purposes, as seen in Fig 6, and will, at the same time, at will of the person wearing it, throw a light exactly where it is wanted. This is equally well adapted to equestrians, to those in torch light processions, or to any occupation where it is desirable to

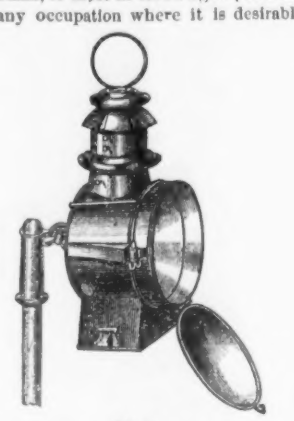


Fig. 5.

have the use of the head and arms. Fig. 7 represents the same lamp for the use of fishermen, with a reflector at right angles, which is capa-

Fig. 6.

ble of throwing a powerful light to the bottom of an ordinary stream. For the use of tenting parties, for lighting well holes, perpendicular

Fig. 7.

shafts, and for various other purposes, it is equally valuable.

Fig. 8 illustrates the coach lamps manufac-

Fig. 8.

tured by this firm, which are warranted to burn on the roughest roads without being extinguished.

Fig. 9.

Fig. 9 shows their fire engine lamps, of which there are two kinds, one for the signal light and one for side lights, both of which are so arranged that when the steamer arrives at the fire they may be turned at any angle desired to give light for working the engine or the hose carriage. These lamps, with colored glass, are particularly useful for signals, for street and railway cars, and numerous other purposes. An illustrated description of these lamps will be furnished upon application to the manufacturers.

Matters at Wheeling.

A correspondent writing from Wheeling, W. Va., speaks of the situation of affairs in the iron trade of that place as follows:

The Riverside Iron Co. have rebuilt the part of their works destroyed last summer in a more substantial manner than as originally built, and commenced running their entire works (126 machines); they claim that they are not accumulating any stock just at this time. The furnace connected with the works is again running and turning out a better quality of iron than at any time since it was put in blast, which is a source of a great deal of pleasure to them, for at one time it was a great annoyance; under the able management of Frank Hearne it comes up to their highest expectations. The Belmont Works have made a large amount of needed improvements in and about their mill, having rebuilt the entire forge and nail department; this necessitated the stoppage of works for about two months. The stock was reduced to a low point, and they are now running full, and expect to run during the year. The new blast furnace was put in blast two weeks ago, and is turning out a fine quality of gray iron, which is unequaled; its capacity is 45 tons in 24 hours. It is a success.

The Job mill is closed, having a larger stock of nails than usual, and no sale at the present prices, they concluded to hold until better times—sensible.

The "Old Reliable" Benwood Iron Works is still moving along as usual, neither turning to the right or left; it stands on a rock, its stockholders being of the wealthiest men in Wheeling, and with Messrs. Laughlin & Loring at the wheel, there is no danger but they will still have the confidence of jobbers throughout the country.

As to the La Belle Works I can say but little. They don't make much noise in the world, but do their full share of business. The hinge factory is running full time, and a fair share of orders is being received; their hopes of better times are firm, and think they will be able to run the balance of the year and not accumulate more stock than they need. It is a power in this city.

The Tack Co. is running four days in a week, as usual, and not piling up any stock as yet.

We have had a few failures here, but none connected with the iron interests—they were all caused by bad management, which has been thoroughly demonstrated to the men who have been victimized.

The Swedish wood carver, Oestergren, favorably known in England, is said to be preparing a chess-board for exhibition at the World's Fair in Philadelphia, the pieces of which are symbolical of the struggle between Ultramontanism and the modern spirit in Germany. On one side of the board appear the Emperor William and the Empress Augusta as King and Queen, Prince Bismarck and the Minister Falk as bishops; the knights are Prussian Uhlans, and the pawns are soldiers and recruits. On the other side stands Pius IX. as king, while his queen is an abbess holding a waxen taper, well nigh burned out. The bishops are cardinals, the knights are monks riding on asses, and the pawns are monks on foot. Oestergren was for many years of his life a paper stainer, and it was not until he was fifty years old that he passed an examination in drawing at the Academy of Arts in Stockholm, and began to draw and carve on wood. This is fourteen years ago, and he is now celebrated for the grace and originality of his productions.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Oct. 13, 1875.

The result of the State election in Ohio is a defeat to the party of inflation, which will do much to cripple it. For many reasons, already set forth in these columns, we are glad of this. A success in Ohio would have strengthened the movement, and created an uncertainty as to the future legislation of Congress on the currency question. Obviously the scheme of unlimited inflation has not received the popular approval. Even those who favor an increase in the volume of currency are wisely suspicious of paper dollars which represent nothing but themselves, and are redeemable only in paper bonds bearing interest in paper. It is evident to the common mind that the value of this description of dollars is, at best, uncertain, and that the more we have of them the less they are likely to be worth. Financial philosophers may see a difference between the paper money proposed by the Ohio inflationists and the Continental currency, which had no value as soon as it was known that no provision would be made for redeeming them in coin, but the difference, if there be any, is not evident to the average mind. Latest advices from Pennsylvania indicate that the result of the movement there is likely to be the same as in Ohio, and after this fall we may expect to bury our old friend, the 3-65 convertible bond, with the honors usually accorded to dead issues. While a majority of our manufacturers and business men do not favor any experimental financial legislation, and are averse to sudden contraction, they believe that the whole policy of the government should point steadily to resumption at the earliest moment consistent with safety. The policy imposed upon the Treasury by the legislation of the last Congress, and which the Secretary is endeavoring to carry out honestly and intelligently, will bring about this desirable consummation in reasonable time. The plan will require modification in some minor details, but we believe it is approved in its general features and purpose by the conservative elements of both parties. We believe that our national bank system, under the present liberal laws, is regarded as a safe and convenient feature of our national financial system, and that the greenback is regarded with confidence and favor in proportion to the strength of the public faith in the disposition of Congress to redeem its demand liabilities in specie as soon as practicable. Were it certain, or even probable, that no provision for their redemption would ever be made, we should witness the humiliating spectacle of a rapid and inevitable depreciation in their value. The public do not ask for specie as a medium of exchange in the common transactions of business, but they do demand that the value of the convenient and cheap paper dollar shall be raised to that of the more costly and less convenient gold dollar, by making them interchangeable. That we shall need a dollar in gold in the Treasury for every dollar of currency in circulation before we can resume specie payments, is illogical and incorrect. No man with a pocket full of paper bills redeemable in coin at the Treasury would trouble himself to make the exchange, unless he needed the coin for some specific purpose, for which the paper dollar could not be used as well. The knowledge that such an exchange was possible would make the greenback as good as the gold, and leave it as now, vastly more convenient and desirable for purposes of currency.

During the past week the improvement in general business has made satisfactory progress, although we regret to say that all branches of trade have not been equally benefitted. The money market has become firmer. For call loans the rate is 3½ @ 4 per cent., and for prime commercial paper, 5½ @ 7 per cent. The bank averages for two weeks compare as follows:

	Oct. 2.	Oct. 9.	Differences.
Loans	$278,641,300	$281,973,600	Inc...$3,332,300
Specie	6,448,900	6,701,500	Inc... 252,600
Legal tend's	66,490,600	60,356,810	Dec.. 6,138,800
Deposits	234,403,600	230,156,100	Dec.. 4,247,500
Circulation	17,925,800	17,852,400	Dec.. 73,400

The loss of $6,133,800 in legal tenders is explained by the fact that the demands for currency from the South and West have been large during the week, by reason of the movement of the crops; very little national bank currency is here, on account of the effectual redemption system in operation, and the result is the shipments are composed almost entirely of legal tender notes. The specie average is $252,600 higher than last week, owing to the receipts of gold from California and Europe and the sale by the Treasury. The customs receipts have been light. The changes in the reserve are a reduction of $5,881,200 in total and $4,819,325 in surplus reserve. These changes point to a firmer money market, with higher rates, which is a favorable sign as showing that legitimate business is improving.

Notwithstanding the efforts of the gold clique to maintain an artificial scarcity of coin and sustain the premium, it has declined, partly on account of the certainty of a defeat of the "rag money party" in Ohio, and partly on account of the increased receipts of gold from San Francisco and Europe. The following shows the daily range of the premium:

	Highest.	Lowest.
Thursday	117⅝	116⅞
Friday	117⅞	116⅞
Saturday	116⅞	116⅞
Monday	116⅞	116⅞
Tuesday	116⅞	116
Wednesday	116⅞	115⅝

The stock market has been somewhat disturbed by fluctuations of a purely speculative character. The principal dealings have been in Lake Shore, Western Union, Northwest, Pacific Mail, Missouri Pacific, Union Pacific and St. Paul. We give below the closing quotations of active shares.

Government bonds are dull, and prices have declined in sympathy with gold. We give the closing quotations below.

The following tables show the foreign trade movements for the week:

IMPORTS.

	1873.	1874.	1875.
Total for week	$7,219,707	$6,479,189	$4,6?2,546
Prev. reported	315,976,123	309,573,072	261,895,829
Since Jan. 1	$323 195,830	$316,052,261	$266,548,375

Among the imports of general merchandise were articles valued as follows:

	Quant.	Value
Brass goods	2	$552
Bronzes	51	15,278
Chains and anchors	18	1,141
Cutlery	65	18,091
Guns	13	2,252
Hardware	4	281
Iron, pig, tons	800	13,370
Iron, sheet, tons	24	5,139
Iron, cotton ties	868	1,104
Iron, other, tons	1,296	100,377
Metal goods	106	14,156
Needles	9	7,863
Old metal		634
Per. caps	16	3,057
Saddlery	7	1,032
Steel	535	19,581
Silverware	5	2,793
Tin, boxes	3,015	15,793
Tin, 1478 slabs	118,316	21,972
Wire	700	5,341

EXPORTS, EXCLUSIVE OF SPECIE.

	1873.	1874.	1875.
For the week	$7,025,771	$5,240,286	$1,877,407
Prev. reported	223,546,358	224,858,723	191,847,115
Since Jan. 1	$230,572,129	$230,099,0 9	$196,724,522

EXPORTS OF SPECIE.

Total for the week	$671,574
Previously reported	9,331,914
Total since January 1, 1875	$10,003,488
Same time in 1874	5,060,939
Same time in 1873	9,961,206
Same time in 1872	4,994,502

Government bonds at the close were strong at the following quotations:

	Bid.	Asked.
U. S. Currency 6's	124	124½
U. S. 6s 1881, reg	120	121¼
U. S. 6s, 1881, cou	123	123¼
U. S. 5-20 1862, reg	115	—
U. S. 5-20 1862, cou	118¾	—
U. S. 5-20 1864, reg	114¾	—
U. S. 5-20 1864, con	119	119¼
U. S. 5-20 1865, reg	115¾	116¼
U. S. 5-20 1865, cou	119¾	119¾
U. S. 5-20 1865, reg. new	118¾	119¼
U. S. 5-20 1868, cou	118⅞	119¼
U. S. 5-20 1867, reg	120	120¼
U. S. 5-20 1867, con	120	120¼
U. S. 5-20 1868, reg	120¾	121¼
U. S. 5-20 1868, cou	120¾	121¼
U. S. 10-40 reg	115¾	116¼
U. S. 10-40 cou	117	117¼
U. S. 5s, 1881, reg	116¾	117¼
U. S. 5s, 1881, cou	117¼	117⅝

The latest quotations of stocks were as follows:

	Bid.	Asked.
Atlantic & Pacific Preferred	5¼	5¾
Atlantic and Pacific Telegraph	17	18
Chicago & Northwestern	34⅛	34⅜
" Pref	49	49⅜
Chicago, Rock Island and Pacific	102¾	103
Chicago, Bur. & Quincy	111	112
Col., Chic. & Ind. Cent	3¾	4
Clev., Col., Cin. & Ind's	48½	50
Cleveland and Pittsburgh	89½	90¾
Chicago & Alton	93	95¾
" Pref	102	104
Consolidated Coal	45	45¾
Canton	..	46
Del. Lack. and Western	118¼	118½
Delaware & Hudson Canal	119¼	120
Adams Express	99¾	100½
American Express	55	57
United States Express	43½	45
Wells, Fargo & Co. Express	78¾	79
Erie	16¾	16⅞
Harlem	130	131½
Hannibal & St. Joseph	17	17¾
" " Pref	20½	21½
Illinois Central	94⅜	96¾
Lake Shore	53⅜	53½
Michigan Central	54¾	55½
Morris and Essex	102⅛	102⅞
Milwaukee & St. Paul	32	32½
" Pref	61½	62
New York Central	102½	102⅞
New Jersey Central	102¾	103½
Ohio & Mississippi	15¾	15⅞
Pacific Mail	36¼	36¾
Panama	127	133
Pittsburgh & Fort Wayne	98¼	99¾
Pacific of Missouri	16¾	16⅝
Quicksilver	16	17
" Pref	20¾	23
St. Louis, Kan. City Northern	5	7
" " Preferred	25	27
Tol., Wabash & Western	5½	5⅞
Union Pacific	66⅞	67
Western Union Telegraph (ex'd)	74¾	74⅞
Mariposa	9¾	10
" Pref	10¾	11¼
Kansas Pacific	8¾	11⅝
Dub. & Sioux City	61	63
N. Y., N. H. and Hartford	144	..

GENERAL HARDWARE.

The Hardware trade presents no new feature of interest. Orders continue small, and there are very few buyers in town; but the aggregate of business is larger than people imagine till they figure up. It is evidently the tendency to order more frequently and in smaller quantities than formerly, which has the effect of making the busy months less busy and the dull months less dull than they used to be. This is a natural result of the increased facility of communication between the retail trade and the manufacturers and large jobbers, and is, on the whole, better for both classes. Among its great advantages is its increased safety, which is at the present time an important point. Credits are being scrutinized as they have not been for a long time, and a large order from any but a very large house would excite serious suspicion. No important changes in prices have taken place during the week.

Although there is little change in the selling prices of Nails, the market seems to be weaker, and there are rumors of sales at less than the market rate. If these sales have really taken place we are unable to authenticate them. $3·10 @ $3·15 is a fair quotation of the market.

In the general line of imported goods there is no change. In German Cutlery there is a good business doing, but English goods are selling slowly.

Although unable to import the large sizes of Screws in competition with the present prices of American, Alfred Field & Co. will continue to sell the small sizes, as is set forth in the following circular:

NEW YORK, Oct. 9th, 1875.

We now beg to inform you that in consequence of the recent large reductions in American made Wood Screws, and the enormous protective duty we are obliged to pay on the Birmingham Screw Co.'s Screws (nearly 100 per cent.), we are for the present shut out from supplying you with Iron Screws thicker than No. 8 gauge.

We shall, however, continue to receive all sizes No. 8 and thinner, which will embrace about all gauges of ⅜, ½, ⅝ and ¾ inch, and some gauges of 1, 1¼ and 1½ inch. Our discount on these sizes is 30 and 15 per cent. Our discount on Brass Screws, all sizes, is 30 and 15 per cent.

Round Head Screws and Machine Screws of all sorts imported to order at very favorable prices. Soliciting your orders,

Your friends,
ALFRED FIELD & Co.,
Sole Importers Birmingham Screw Co.'s Screws.

Quackenbush, Townsend & Co., manufacturers of the Challenge Door and Gate Springs, have adopted the following reduced prices for these goods:

	Japanned.	Galvanized.	Copper Bronzed.	Nickel Plated.
No. 9	$2·00	3·50	4·00	5·50
No. 7	$2·50	4·00	4·50	6·00
No. 6	$3·50	4·50	5·00	7·00

Discount 10 per cent.

Russell & Erwin Mfg. Co have issued a circular giving illustrations and prices for their Fire Irons and Sets, Waterman's Bake Pans and Hale's Meat Cutters. The prices have nothing new beyond the changes recently reported by us.

The Gaylord Mfg. Co. have issued a handsome catalogue, 94 pages, fully illustrated with wood cuts showing the various styles of their Locks and Keys. It presents these goods much more clearly and attractively than any thing before issued.

Graham & Haines have been appointed agents for the goods made by the Jacobus & Nimick Mfg. Co., of Pittsburgh, as announced in the following circular:

CIRCULAR.

PITTSBURGH, Pa., Oct. 1, 1875.

GENTLEMEN: We beg to inform you and the Hardware trade generally, that we have appointed Messrs. Graham & Haines, 88 Chambers street, N. Y., general agents for the sale of the goods of our manufacture.

We shall keep a full line in their hands, and goods will be shipped from their store, or our factory, at same terms and prices, as you may prefer.

To those who know our goods we need not say that for quality and finish they are not excelled in the country. We are aware that it is the custom among some people to decry Locks of Pittsburgh manufacture, and to all such we beg to say that we are now making as good and complete a line of Rim and Mortise Locks and Latches as any competing company, and ask the trade to examine our samples at our New York depot before making orders, and be convinced of the truthfulness of our assertion.

We thank our friends for their liberal patronage in the past, and intend to merit its decided increase for the future. Very truly, yours,

JACOBUS & NIMICK MANUFACTURING CO.
New York Office and Warehouse, 88 Chambers street.

Rogers & Bro., the well known manufacturers of Silver Plated Ware, of Waterbury, Conn., and 203 Broadway, New York, publish on the opposite page a notice warning the trade against a dangerous counterfeit of their goods. This advertisement should not be overlooked by any of our readers.

The sales of Ausable Horse Nails continue large. This company is running their four large factories full time, and are doing their best to fill orders promptly. We are informed that their sales this fall are larger than they have ever been, and that their Hammer Pointed Nails, both polished and blued, are gaining rapidly in popularity. The company is building new pointing machines, and hope soon to be able to meet the demand for this kind of Nail.

The National Tube Works, Boston, have just received a gold medal at the San Francisco Mechanics' Institute Fair, awarded them for the superior quality of their Patent Enameled Wrought Iron Water Pipe and Tubing, made by them. Their advertisement will be found on the 26th page.

Semple, Birge & Co., St. Louis, advise us that they have vacated their old warehouses and are now occupying a magnificent new building on Washington avenue, near the Lindell Hotel. They now have one of the best houses in the country for the proper display and handling of their large business, and their location is in the new trade center to which many first-class houses are moving. They invite correspondence to their new number, 910 and 912 Washington avenue, and ask their friends and the trade to visit them.

In our last issue the list price of Silver's Meat Stuffers was incorrectly given. To repair this error, we give below an extract from the circular of the Bailey Wringing Machine Company, who are the agents for their sale:

Family Sizes.

No. 1, Capacity 6 lbs.	$6·00
No. 2, " 9 lbs.	9·00

These Stuffers are placed upon the market in compliance with a demand for a substantially constructed machine for use in families, hotels, restaurants, &c. Unlike other small sized Stuffers, the barrels are made of heavy galvanized plate iron (as are all our other sized Stuffers), securely riveted, and being in every particular of substantial construction. Their unparalleled low prices, when quality is considered, must insure for them an extensive sale.

Weight of No. 1, when boxed singly, 30 lbs.; 2, 55 lbs.; 3, 80 lbs.

Weight of No. 2, when boxed singly, 40 lbs.; 2, 75 lbs.; 3, 105 lbs.

The above Stuffers are single geared, yet their substantial construction will, undoubtedly, make them desirable for butchers doing a very small business, and their cheapness will be an important consideration with those who want to equip themselves for business at a moderate expense.

Silver's Patent Meat Stuffer, known throughout the Country as "The Butchers' Favorite," Patented Nov. 26th, 1872.

This machine has been before the public for about three years, winning favor from Butchers and Sausage makers everywhere. The reputation acquired has been almost without a parallel in the history of machinery. Nothing combining simplicity, compactness, strength and perfection of mechanical arrangement so eminently has ever found its way before the public for this purpose. It is a model of neatness. All the gearing being encased, the operator is not subjected to the annoyance of having his clothing soiled or caught. The crank shaft is provided with a pinion, which, by a slight pressure inward, on the crank, is brought in line with the driving, or large wheel, giving the required power and slow motion for stuffing. When the crank shaft is drawn out, the pinion comes in line with the rack bar, reversing the motion of the piston, throwing it out rapidly, without changing or reversing the motion of the crank. The piston head is provided with a self-acting valve, which serves to admit air instantly on its being reversed, removing the difficulty incident to withdrawing the piston with an air pressure behind it, and a vacuum in its front.

Capacity of No. 3, 12 lbs. Weight of No. 3, when boxed, 60 lbs. ..... Price, $18·00

Capacity of No. 4, 20 lbs. Weight of No. 4, when boxed, 75 lbs. ..... Price, $25·00

BRITISH IRON MARKET.

(*Specially reported by cable for The Iron Age.*)

WEDNESDAY, Oct. 13, 1875.

Scotch Pig.—A large business has been done under an improved demand, but prices are not so strong. The following are makers' quotations:

Gartsherrie No. 1	73/6
Coltness No. 1	78/
Glengarnock No. 1	69/
Eglinton No. 1	64/6

Manufactured Iron.—A slight improvement is noticeable, and prices are firm.

Rails are without change.

IRON.

American Pig.—The market continues in the same condition as last week. Small sales to meet the current requirements of consumers are all that we hear of. Indeed, the general expectation for lower prices would prevent anything like speculation. The strong companies are doing what they can to maintain prices, but the weak producers and the lots in second hands exert a powerful influence on the other side. We quote without change; No. 1 Foundry, $25 @ $25·50: No. 2 Foundry, $23; Gray Forge, $20 @ $22.

Scotch Pig.—The cost of importation and the smallness of stocks here gives strength to the market for Scotch Pig, which is firm. We note the sale of 100 tons Eglinton at $28·50, 50 tons Summerlee at $32, 200 tons Glengarnock, to import, said to be at $31. Coltness is held at $33; Gartsherrie, $32·50 @ $33; Summerlee, $32; Eglinton, $29 @ $30.

Rails.—We hear of considerable inquiry, but do not learn of any sales of moment. We quote $45 @ $50, at works.

Old Rails.—We note the sale of a mixed lot of 150 tons Wrought Scrap and 300 tons Barlow Rails, at a price stated to be between $26 @ $27. In the absence of other transactions we quote nominally $25 @ $26.

Scrap.—Wrought Scrap continues without change. Sales have been unimportant, and we continue our quotation of $30 @ $32·50.

METALS.

Copper.—The week's sales of Lake Superior Copper have amounted to some 400,000 to 500,000 pounds on the spot at 23¼c. @ 23⅝c.; within this range the market closes firm, but quiet. Nothing has been done in futures. Baltimore may be quoted 23c. @ 23¼c., according to quantity; sales thereof are light. London improved 10/ last week on Chili Bars, closing on Saturday at £83, while Best Selected stood £90; the market there was stiff. People in metal circles in England are periodically a good deal exercised about Copper matters on Lake Superior; they are either assured by their correspondents from that region, or from here, that we shall have some 9000 tons to spare them during a season, or that mining in our favored locality is merely surface, and that the shallowness of our veins is beginning to tell already against the country. The Houghton *Mining Gazette* takes them up on the latter subject, and specially referring to the Calumet and Hecla mine, remarks as follows: "The mine has been working for a number of years with unvarying success. Its product last month was nearly 1130 tons of mineral, affording a yield of Copper unheard of in the same length of time outside of this wonderful mine. The figures tell the story of the richness of the industry to-day, and reflect more accurately than anything we could write what it is probably capable of doing for years to come. Colossal machinery, equal to hoisting and pumping from 2500 feet below the present lowest levels, is being provided. Surface improvements calculated to last a quarter of a century or more are under way. What do these things mean? Why, that the Calumet and Hecla is good for decades as a producer, and a telling rebuke to all those who, like the correspondent referred to, assert that the shallowness of the veins of this country are beginning to tell against it." The manufactures of Copper have been upheld as follows: New Copper Sheathing, 30c.; Bolts and Braziers, 31c.; Bronze and Yellow Metal Sheathing, 31c.; and Bolts, 28c., net cash.

Tin.—London, from the highest previous point of £88. 10/, had receded with Straits Tin to £85 yesterday, but since then telegrams have been received reporting a rebound to £86 @ £86. 10/. Abstracting altogether from the statistical position, which, although not bad, might be better, the facts connected with the present fluctuations are the following: There have been for the past year or two certain irresponsible firms, both in Holland and England, who succeeded in making this metal a sort of shuttlecock. Perceiving that certain circumstances like, for instance, Australian increased production, naturally weakened the position of Tin, they systematically operated for a decline, and the means resorted to at times were not always the most scrupulous ones. Finally, those who followed Tin all the way to £77. 10/ have been caught in a trap, and are now doing the best they can in order to disentangle themselves. One of the reports from Holland by last mail asserts that the Tin market is so fearfully oversold in that locality that it may eventually be forced up much higher, through the efforts of the operators for a fall to cover their outstanding contracts. The result will be that these parties, for a time to come at least, will deem Tin too dangerous an article to sell without possessing it, and the metal will then, and then only, be restored to the normal rules of demand and supply. Here the feeling remains one of confidence in its immediate future, based on the fact that consumption has been stimulated by previous low figures, and that the visible supply is moderate. We have had a dull but firm market during the week, with but few sales in a jobbing way. The following are the quotations in gold, large lots: Straits, 20c. and Banca, 24c. Of the two English kinds there is none on hand. Tin Plates are quiet in Europe, but figures there show no further yielding. Here, we have remained inactive, the dealings being merely jobbing transactions to supply immediate wants. We quote, gold, per box, large lines, ordinary brands as follows: Charcoal Bright, $7·37½ @ $7·50; ditto Ternes, $7 @ $7·25; Coke Tin, $6·50 @ $6·75, and ditto Ternes, $6·25.

Lead.—There have been sold during the week 125 tons common Domestic at 5·65c. @ 5·75c., gold, while a lot of 150 tons, "Richmond" brand, Nevada Lead, just arrived, may still be sold to-day, not unlikely at 5½c., gold, this species of Lead being inferior. It will thus be seen that there is not much doing, and the little done is a sort of hand-to-mouth affair, the season drawing to a close. On the other hand, some more activity has been displayed in selected brands of Domestic Lead. Pennsylvania and Newark were sold at 7¼c. @ 7·30c., currency, while St. Louis, selected, brought 7·70c., currency, delivered East. The fact is that at St. Louis the market still tends upward with Soft Lead, which commands 7½c., currency, out there, and freight has risen to 50c. The supply of bullion out West has been a little more ample, but prices paid there are too high. In the immediate vicinity of New York some 500 to 600 tons bullion are now in process of smelting. The general aspect, as regards common Domestic, is not cheerful for the moment, whereas it favors Soft Lead specially. Foreign could not be got under 7½c., gold, at present. The accounts by mail from Europe are to the effect that the Northern ports and centers have little stock, while the South now receives ample supplies from Spain. The manufactures of Lead are steady on the basis of 8¼c. for Bar and Pipe and 9¼c. for Sheet, less 10 per cent.

Spelter and Zinc.—Activity in the Brass manufacturing regions still being quite moderate, Spelter has not yet shown any particular indications of a revival; yet it moves off steadily in moderate quantities at 7¼c., currency, 30 days. Nothing is to be reported in Foreign, which remains nominally 7½c. @ 7⅝c., gold. The advices from Europe are uniformly favorable—nay, more so by the last mail than any previous one. Even at Breslau, the Silesian center, scarcity of available Spelter is severely felt by those who have contracts to fill. *Sheet Zinc.*—The advance to 85 francs in France has stiffened holders in their views, and we quote the same firm at 9c. @ 9¼c., gold.

Antimony.—The position of this metal improves as we proceed. Stocks have run low and cannot be replaced to advantage. Hence its firmness at 13¾c. @ 14c., gold.

COAL.

There has been no movement of any importance in the Coal market during last week, and outside of the retail trade there is no activity. At the shipping ports trade continues quite dull, as both manufacturers and dealers are fully supplied.

The quantity of Coal sent from the Schuylkill region during the past week was, by rail, 126,587 tons; by canal, 33,486 tons; total, 160,573 tons, against 156,539 tons for the corresponding period of last year. Increase, 4034 tons. The total shipments so far this year were 3,144,269 tons, against 3,475,122 tons for same period last year, decrease, 330,853 tons.

The quantity sent from all the regions for the week was: Anthracite, 570,974 tons; Bituminous, 95,929 tons; total, 666,903 tons, against 492,398 tons Anthracite, and 80,317 tons Bituminous for the corresponding period of last year. Increase of Anthracite, 78,576 tons; increase of Bituminous, 15,612 tons. Total increase, 94,188 tons.

The quantity sent from all the regions so far this year foots up 14,619,564 tons Anthracite, and 2,933,057 tons Bituminous. Total, 17,552,621 tons, against 14,978,180 tons Anthracite, and 2,745,193 tons Bituminous for the same period of last year. Decrease of Anthracite, 358,616 tons; increase of Bituminous, 187,864 tons.

The following are the prices charged for Coals mined by the Philadelphia and Reading Coal and Iron Company, deliverable on board vessels at Port Richmond, Philadelphia, for the month of October. The company reserve the right to withdraw or change these prices at any time during the month, except on sales made prior to such changes:

	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.
Hard White Ash Coal	$4 55	$4 65	$4 75	$5 15	$5 60	$4 45
Free Burning White Ash Coal	4 55	4 65	4 75	5 15	5 60	4 45
Schuylkill Red Ash	....	....	5 05	5 25	5 65	4 45
Shamokin	....	....	....	5 40	5 80	4 50
Lorberry	....	....	5 90	5 90	5 90	4 65
Lykens Valley	....	....	6 50	6 50	6 50	5 50

We quote as follows: Anthracite, $4·95 @ $6·10; Cumberland, $6·25 @ $6·75; West Virginia, $6·75 @ $8; James River Steam, $6·25; James River Carbonite, $9 @ $9·50; Kanawha House, $11·50; American Gas, $6·75 @ $7·25; American Cannel, $12 @ $14; Pennsylvania and Westmoreland, $6·75; Murphy Run, $6·50; Newburgh Orrel, $6·50; Sterling Ohio, $10; Ince Hall, $17 @ $18; Liverpool House Cannel, $17; Liverpool Gas, $10 @ $12; Newcastle Gas, $8; Scotch, $7·50 @ $9.

The Coal transported over the Cumberland Branch Railroad during the week ending Oct. 9, 1875, amounted to 5411 tons, as against 5527 tons shipped in the corresponding period of last year, showing a decrease of 116 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 44,937 tons, against 47,952 tons shipped in 1874, a de-

crease of 3015 tons. The aggregate amount of Cumberland Coal shipped by the various companies so far this year amounts to 1,815,943 tons.

OLD METALS, PAPER STOCK, &c.

We have nothing new to report in the condition of the market for Old Metals, Paper Stock, and other junk materials. Business still continues very quiet, and quotations remain about the same as last reported. Grass Rope is the only article that is in good demand at present, and prices are firm at quoted rates. We quote the following as the current purchasing rates:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 4½c.; Zinc, 4¼c. @ 4½c.; Pewter, No, 1, 18c.; do., No. 2, 8c. @ 12c.; Spelter, 5c. @ 5½c., Wrought Iron, 1c.; Sheet do., ½c.; Cast, do., ½c.; Machinery, do., ¾c.

Rags, &c.—Canvas, Linen, 4¾c. @ 5¼c.; do. Cotton, No 1, 5¾c. @ 6¼c.; No. 2, 2¼c.; White, No. 1, 6¼c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 5c. @ 5½c.; Gunny Bagging, 1¼c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1¾c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, c. @ 1¼c.; Grass Rope, 3c.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending Oct. 12, 1875:

Hardware.

Anderson, Marble & Co.
Files, cks., 29
Boker Hermann & Co.
Casks, 3
Carey Samuel,
Grindstones, cks., 87
Grindstones, 312
Field A. & Co.
Mdse. pkgs., 2
Folsom H. & D.
Guns, cs., 4
Howard, Sanger & Co.
Gun caps, cs., 4
Livingstone W. & F.
Grindstones, 1050
Lau & Garlichs,
Mdse. pkgs., 3
Merchant S. L. & Co.
Files, cs., 1
Moore's J. P. Sons,
Per. caps, cs., 5
Empty cartridge cs., cs., 3
Mason John W. & Co.
Wire rope, coils, 3
Merchants' Dispatch Co.
Wire rope, pkgs., 3
Macy R. H. & Co.
Cases, 4
Patrick R. & Co.
Gun wadding, cs., 2
Per. caps, cs., 1
Pritchard R.
Casks, 1
Robbins C. & Sons,
Bundles, 1
Remington E. & Sons,
Mdse. pkgs., 2
Spies, Kissam & Co.
Cases, 1
Guns, cs., 4
Selchow E. G.
Cases, 2
Scheur Bros.
Packages, 3
Schoverling & Daly,
Mdse. pkgs., 1
Thompson, Langdon & Co.
Cases, 10
Tomes Francis & Co.
Cases, 1
Van Neet A. R. & Co.
Cases, 2
Van Wart & McCoy,
Cases, 10
Mdse. cs., 1
Wiebusch & Hilger Hwd. Co.
Casks, 6
Cases, 2
Mdse. pkgs., 10
Order.
Wire, cs., 36
Grindstones, 4
Cutlery, cs., 2
Casks, 1

Iron.

Lang W. Bailey & Co.
Bars, 442
Plates, 7
Naylor & Co.
Bars, 12
Phelps, Dodge & Co.
Sheet, pkgs., 2000
Robbins C. & Sons,
Bundles, 50
Williston, Knight & Co.
Bundles, 130
Order.
Ore, tons, 600
Spiegel, lots, 1
Pig, tons, 200
Scrap, hoop, bdls., 403
Cotton ties, bdls., 480

Steel.

Brown Wm.
Bundles, 306
Hogan John,
Bundles, 20
Lang W. Bailey & Co.
Bundles, 95
Axles, 1
Piston rods, 6
Prosser Thos. & Sons,
Tire forgings, 64
Pierrons & Co.
Bundles, 150
Sulzbacher & Heyman,
Packages, 80
Sanderson Geo. & Co.
Bundles, 88
Casks, 3
Order.
Bundles, 190

Metals.

Baring Bros. & Co,
Tin, slabs, 396
Bruce & Cook,
Tin plates, bxs., 803
Brown Bros. & Co.
Tin, slabs, 307
Darrell & Co.
Zinc, cks., 1
Grewald, Beam & Co.
Tin plates, bxs., 100
Lanman & Kamp,
Tin, slabs, 202
Leaycraft & Co.
Scrap, cs., 2
Pewter, cs., 32
Copper, cs., 17
Phelps, Dodge & Co.
Tin plates, bxs., 1314
Visser de J. A. P. & Henry Winter,
Tin, slabs, 780
Order.
Tin plates, bxs., 1910
Terne plates, bxs., 1030
Tin, slabs, 1120

PHILADELPHIA.

PHILADELPHIA, Oct. 12, 1875.

There is nothing of novelty in the situation of the market here. It is certainly no weaker than at our last, and the volume of business continues about the same, but there are no signs of improvement, either in price or demand. The reports from Pittsburgh indicate the possibility of another lock-out of the puddlers on account of their refusal to accept a reduction of $1 from present prices, which, should it occur, will have a tendency to strengthen prices of Muck Bar, Old Rails and Scrap, and to still further weaken Pig Iron, although very little, if any, Eastern Pig is now sold west of the mountains. A few furnaces are holding off for higher prices than are now offered, but the majority of them are quite willing to sell at quotations, although how Iron can be made and put in market for present rates no one can discover. In Manufactured Irons the only movement is in Rails, which sell quite freely, and although the Rail mills are complaining, they are quietly picking up orders for about half their full capacity, for cash, which is better than any other branch of the Iron trade can do. The Steel Rail trade is reported very good, and most of the works as having orders for some time. The Pennsylvania Steel Company has declared a semi-annual dividend of 6 per cent., half in cash and half in stock, and reports a satisfactory state of affairs, with considerable orders ahead. Old material is in fair demand, Old Rails being well maintained in price, and Scrap scarcer and more sought for, without, however, any advance on last week's quotations. We quote the following prices as current in this market:

PIG IRON.—No. 1 Foundry, $25; No. 2, $22·50 to $23; Gray Forge, $21·50 to $22.

BARS—2·6c. to 2·7c. per lb.

RAILS—$45 to $50, at works.

MUCK BAR—$42 to $43.

OLD RAILS—$26 to $27.

SCRAP.—$31 to $32 for No. 1 Wrought.

Among the sales we note some 5000 tons Pig Iron, about equally divided in grades, at quotations. 5000 tons Rails for Western delivery, and 3000 here for near-by roads at $47 to $49, as to weight and section. *Muck Bar*—500 tons at $42. *Old Rails*—1000 tons at $26·50, here, and 400 tons *Scrap* at $31, with inquiries for more.

PITTSBURGH.

PITTSBURGH, Oct. 12, 1875.

PIG IRON.—This has been the dullest week since the lock-out. The reported sales did not aggregate more than 1000 tons, nearly all in small lots, and what makes it the more noticeable is that it should occur at a time when trade is usually active. The mills continue to report a scarcity of orders for the products, also that prices do not more than cover actual cost, if that; hence they are not making any effort to extend their business. They claim that the raw Iron is higher relatively than the products, hence they are buying no more than is absolutely necessary, determined, for the time being, to carry no more stocks than they can possibly help. It was pretty confidently expected last month that there would be a change for the better in October, just at it was in August that there would be an improvement in September, but these expectations have not as yet been realized, and, furthermore, the outlook is no more encouraging. However, producers are still hopeful in regard to the future; they appear to be impressed with the belief that in no event is there likely to be any further shrinkage in prices, and they base this mainly on the reduction in stock, which is lower now than it has been for many years, and the production has also been very much curtailed. Prices are nominally unchanged. No. 1 Foundry, $25 to $26, 4 months; No. 2, $23 to $24; Gray Forge, $23 to $24; White and Mottled, $21·50 to $22·50.

MANUFACTURED IRON.—There is no improvement to record. On the contrary, some manufacturers report that orders are scarcer now than they have been at any time since the lock-out, and with a falling off in the demand, competition is more active, and cutting rates is still more or less indulged in. The Bar mills generally are doing little or nothing, and there is no inducement to do anything in the present condition of affairs, as current rates afford no margin. Some makers declare that there is an actual loss. One of our oldest manufacturers was heard to remark, the other day, that the more Bars were sold the less money the sellers would have. There is still some inquiry for Sheet Iron, but the demand for Hoop is falling off and the season for Cotton Ties is about over for this year. Painter & Sons made and shipped South about 4000 tons of Cotton Ties this year, and they would have made a good many more but for the lock-out.

NAILS.—Trade continues unsatisfactory, not so much for want of orders, although they have slacked off somewhat, as in regard to prices, which have been cut so close that there is little or nothing left for the maker. 100 keg lots are still quoted at $2·90, 60 days, with 2 per cent. off for cash. Horse Shoes quoted at 4¾c. per lb., and Mule Shoes at 5¾c., cash.

SCRAP IRON continues very dull; dealers report that they are doing next to nothing; prices weak and lower. No. 1 Railroad Wrought Scrap quoted at 1·20c. to 1·25c. per lb., 4 months, delivered free at mills. Scrap Steel is but little, if any, better than Scrap Iron.

PROBABILITY OF ANOTHER LOCK-OUT.—It is understood that a number of the mills have, as per agreement, given their puddlers, rollers and heaters notice that in thirty days wages will be reduced, and as the latter are not likely to agree to the reduction, a lock-out will probably be the result. The mills generally are in good shape for a strike, as they have but few orders, and are making no money on what they have; furthermore, a lock-out would have one good effect, it would curtail production, and stiffen prices for the products, although, on the other hand, it would depress the market still more for the raw article.

LACKS CONFIRMATION.—The report current a week ago that the Superior Rail Mill, which has been idle for going on two years, was started up again. This mill, when running full, gives employment to some 500 or 600 men.

The Pittsburgh *Commercial* of Oct. 9th says: The market for pig metal continues to be exceedingly dull, and it does not look as if the expectation that the demand in October would be more than it was in September (which we referred to in our last week's report), is going to be realized. The commission houses all report that they have little or no inquiry, except for small lots actually required for mixtures, and the manufacturers say they cannot afford to pay even present rates for pig metal, and that if both the demand and prices for manufactured iron does not improve considerably before long, they must stop altogether, or reduce the cost of production, by getting labor and raw material for less than present rates. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

350 tons close gray.....$23·50—4 mos
150 tons gray forge.....24·00—5 mos
100 tons close gray.....23 00—4 mos
100 tons white and mottled R. S.....21·50—4 mos
10 tons No. 1 foundry.....24·00—cash.

CONNELLSVILLE COKE.

20 tons No. 2 foundry.....$24·00—cash.
10 tons No. 2 foundry.....25·00—4 mos

CHARCOAL.

40 tons No. 2 h. r.....$25·00—cash.

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Oct. 11, writes us as follows: The mills and foundries, as a general thing, are full of work. There is more demand for Iron, but prices show no improvement. The usual time, four months, is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores.	$25·00 @ 26·00
" 2 " " " "	23·00 @ 24·00
" 1 Mill, " " "	22·00 @ 23·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores.	23·00 @ 24·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores.	21·00 @ 22·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores.	22·00 @ 23·00

HOT BLAST STONE COAL AND COKE.

No. 1 F'dry, from Hanging Rock Ores.	$23·00 @ 24·00
" 2 " " " "	22·00 @ 23·00
" 1 Mill, " " "	21·00 @ 22·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores.	23·00 @ 24·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores.	22·00 @ 23·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores.	21·00 @ 22·00
No. 1 F'dry, from Missouri Ores.	24·00 @ 25·00
" 2 " " "	24·00 @ 25·00
" 1 Mill, " " "	26·00 @ 27·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores.	35·00 @ 40·00
" " Tennessee Ores.	28·00 @ 30·00
" " Alabama and Georgia Ores.	28·00 @ 30·00
Car Wheel from Kentucky Ores.	28·00 @ 40·00

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Oct. 11, write us as follows: PIG IRON.—An ordinarily good demand prevails, but prices are becoming so low that a desire to realize is about the only inducement a producer can have to sell any quantity. Iron of all grades, however, is offering freely at present prices. There will be an immense reduction in production of all grades of Hanging Rock Charcoal next year, which must have a marked influence on the future of this market. Whether this and other causes will operate with sufficient force to effect a decided improvement for producers, or whether other influences will counterbalance them, can hardly yet be determined, but the probabilities are strongly in favor of the former. As a matter of general interest we report a contract just closed for 20,000 tons of Foundry Pig Iron, being by several times the largest transaction in this market of which there is any record. The sale is a special one, delivery extending over some length of time, and it cannot be taken as an indication of the general market, but rather as a peculiar feature of considerable importance.

HOT BLAST CHARCOAL.

Hanging Rock No. 1..₱ ton.	$25·50 @ 26·00—4 mos.
" " No. 2.....	23·50 @ 24·00—4 mos.
" " Forge.....	21·50 @ 22·00—4 mos.
Southern Brands No. 1.....	23·50 @ 24·00—4 mos.
" Forge.....	21·00 @ 21·50—4 mos.
Virginia No. 1.....	24·50 @ 25·00—4 mos
" No. 2.....	23·00 @ 23·50—4 mos.
" Forge.....	21·50 @ 22·00—4 mos.

HOT BLAST STONE COAL AND COKE.

Hanging Rock No. 1...₱ ton.	$23·00 @ 24·00—4 mos.
" " Forge.....	21·50 @ —4 mos.
Red Short No. 1.....	27·00 @ —4 mos.
" Forge.....	24·00 @ —4 mos.
Am. Scotch, No. 1.....	24·00 @ 25·00—4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ₱ tn.	$40·00 @ 45·00—4 mos.
Missouri " "	35·00 @ 40·00—4 mos.
Southern Br'ds " "	30·00 @ 40·00—4 mos.
Machinery and Forge.....	30·00 @ 35·00—4 mos
Blooms.....	— @ —4 mos.

ST. LOUIS.

Messrs. SPOONER & COLLINS, Iron commission agents, 409 North Third street, St. Louis, under date of Oct. 7, report the Iron market as follows: The demand for Foundry and Mill Irons is still very fair, but nothing satisfactory can be noticed in prices. The tendency is toward inside quotations, and many sales are reported much below market rates: We quote as follows:

Mo. Stone Coal, No. 1 F'dry.	$27·00 @ 28·00—4 mos.
" " No. 2 F'dry.	25·00 @ 26·00—4 mos.
" " No. 1 Mill...	23·50 @ 24·00—4 mos.
" Charcoal, No. 1 F'dry...	27·00 @ 28·00—4 mos.
" " No. 2 F'dry...	25·00 @ 26·00—4 mos.
" " No. 1 Mill...	23·50 @ 24·00—4 mos.
Tenn. Charcoal No. 1 F'dry..	26·00 @ 27·00—4 mos.
" " No. 2 F'dry	25·00 @ 26·00—4 mos.
" " No. 1 Mill...	24·00 @ 25·00—4 mos.
Georgia Coke No. 1 Mill.....	25·00 @ —4 mos.
" No. 2 Mill.....	24·00 @ —4 mos.
H. R. Charcoal No. 1 F'dry..	27·00 @ 29·00—4 mos.
H. R. " No. 2 F'dry..	25·00 @ 27·00—4 mos.
H. R. " No. 1 Mill....	25·00 @ 26·00—4 mos.
Massillon, A No. 1 Iron.....	35·00 @ 36·00—4 mos.
" B, No. 1 Iron.....	32·00 @ 33·00—4 mos.
" No. 2 Iron.....	30·00 @ 31·00—4 mos.
Cold Blast Car Wheel, Mo....	32·00 @ 35·00—4 mos.
" " Tenn.	32·00 @ 35·00—4 mos.
" " Ala..	32·00 @ 35·00—4 mos.
" " Hanging Rock.....	50·00 @ 53·00—4 mos.
No. 1 Wrought Scrap.....	1c. per lb.
Heavy Cast "	9·10c. "
Light Cast "	5·10c. "

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of Oct. 12: Business continues ruling inactive and quiet. Quotation figures for Manufactured Irons are weak and shaded for desirable specifications, and we quote the market depressed, with unaltered list:

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick.. ; 1 to 4½ wide by 1¼ to 2 thick ;	2·6-10 to 2 7-10c. ₱ lb.
Round and square, ordinary sizes, from ⅜ to 2 inclusive.....	2 6-10 to 2 7-10c. "
Hoop Iron, 1½ wide and upward...	4½ to 4¾c. "
Band Iron, from 1¼ to 4 in. wide..	3¾ to 3¾c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick.....	4 to 4¼c. "
Norway Nail Rods.....	7 to 7¼c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes.....	15¾ to 16c. "
Machinery Steel.....	11 to 11¾c. "
Cast Spring Steel.....	10 to 10¾c. "
Homogeneous Steel Plate.....	10¾c. "
Perkins' Horse Shoes, per keg of 100 lbs.....	$5·12½
" Mule Shoes " "	6·12½

Common Horse Nails, from 14c. to 18c. per pound.

	10	9	8	7	6	
Putnam Horse Nails..	23	24	25	26	28c.	per ₱.
	10	9	8	7	6	
Globe Horse Nails..	23	24	25	26	28c.	per ₱.

R. R. Spikes.....5¾ by 9-16 at 3c to 3¼c. per lb.

Messrs. R. C. HOFFMAN & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of Oct. 11: We have still an inactive Iron market, with no change in prices. We quote:

Baltimore Charcoal.....	$32·00 @ 35·00
Virginia "	31·00 @ 34·00
Anthracite No. 1.....	25·00 @ 26·00
" No. 2.....	23·00 @ 24·00
White and Mottled.....	19·00 @ 21·00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of Oct. 12: Nothing new to report in the Pig Iron interest. Well known Virginia Car Wheel Irons continue scarce. We quote as before:

Virginia cold blast Charcoal Pig Irons.	$30·00 @ 35·00
" hot " " "	28·00 @ 32·00
Va. hot blast Coke Pig Iron, No. 1 ex.	26·00 @ 27·00
" " " " No. 2 ex.	25·00 @ 26·00
" " " " No. 3 ex.	24·00 @ 25·00
Virginia Anthracite. No. 1 ex	27·00 @ 28·00
" " No. 2 ex.....	26·00 @ 27·00

BOSTON.

OCT. 9.—*Pig* continues very dull, and quotations are wholly at sea. The sales that are made are only occasional 5 to 10 ton lots, and are of a character to have no impression upon the market beyond what trivial sales at depressed prices will secure. We quote nominally: No. 1, $29 to $30; No. 2, $24 to $27; and Gray Forge, $21 to $24. *Bar* is selling only in a small jobbing way, $57·50 seeming to be the general price for warranted Bars. There is some little disposition among interior dealers to stock up, but it assumes no tangible shape, no definiteness as to quantity or prices that would be satisfactory. Common Iron is dead, and quotes at $51 to $52. *Steel* has again had a quiet week, sales being confined almost wholly to tool makers. Prices are a trifle firmer on foreign, while American Steels are somewhat steadier. We quote: American Tool, 14c. to 15c.; American Machinery, 9c. to 9½c.; Bessemer Tires, 7c. to 7½c.; Sweet's Excelsior Tire, 8½c. to 12c.; English Tool, 16c. to 18c., gold. *Copper* has shrunk fully ¼c. during the week on both spots and future, and buyers are offered their option in either at 23½c. to 23¾c., the inside quotation being available on the larger lots. The manufacturing companies are, however, buying very sparingly, seeming to have confidence that 1c. will be lost on ingots before snow flies. For manufacturers we quote: New Sheathing, 30c.; Bolts and Braziers, 31c.; Yellow Metal Bolts, 20c. to 29c. *Lead* has dropped from a ¼c. to ½c. during the week from an oppression of stock and a light business. The market closes weak, with sales very trivial. We quote Pig 5¾c. for Domestic, and 6⅝c. to 6½c. for Foreign; Sheet and Pipe Lead, 9c., currency; Tin Lined Pipe, 16½c.; Bar Lead, 9c., less usual trade or 10 per cent. discount. *Antimony* is firm, with very little business, quoting from 13¼c. to 13½c. as to lots bought. *Spelter* is strong and dull at $7·55, 30 days, and $7·40, prompt cash, all currency. Silesian is having a trivial business at $7·30. *Tin* maintains its position with increasing strength, and values here have been advanced. Sales, however, are trivial, and buyers are more than ever cautious. We quote: Straits, 20c.; Banca, 24c.; Refined English, 19¾c. to 20c., gold. Plates are active; we quote Charcoal I. C., $7·25 to $7·75; Coke, $6·50 to $6·75; and Terne at $6·15 to $6·50 gold.—*Com. Bulletin.*

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, Sept. 26, 1875.—*Metals.*—But few changes have occurred in the European metal markets during the week; the general tendency remains a favorable one, but a thorough revival need not be looked forward to till spring next year. The winter season, and with it the closing of the more northern ports of Europe not being remote, we shall have the usual fall activity, closely followed by the dull spell of mid-winter. Meanwhile business has been placed on a much sounder footing; a great many rotten concerns, especially in England, have been weeded out through the protracted prostration in trade, the credit system when prolonged their existence is now conducted with a more searching severity, and speculation receives little encouragement. The revival in spring will, therefore, be shorn of its most dangerous and precarious elements, and inspire confidence. The levity which has characterized many of the banking systems lending support to the reckless speculators who failed in summer, cannot be indulged in henceforward; an era of more solid prosperity seems, consequently, to be dawning upon us, provided always that the peace of Europe be maintained. *Copper.*—The late free chartering on the West Coast, and a less active demand for consumption have had the effect of quieting the European markets. Holders, nevertheless, make a show of firmness, and are unwilling sellers at current rates, which would entail some loss. Paris has formed an exception; the market here has been active and higher. We quote Chili Bars, 217·50 francs; Common do., 212·50; Ingots, 223·75; English Tough Cake, 222·50, and pure Corocoro Ore, 215. Havre, on the other hand, has remained unaltered, and quotes first brands Chili, 215; current do., 211·50 to 212·50, and Lota and Urmeneta, 210. Copper is firmly held at Marseilles on the basis of 215 for small Ingots. *Tin.*—Transactions in this metal continue on a liberal scale in the leading markets, a goodly amount of sales made by operators for a decline some time ago being still uncovered, especially of Straits Tin to arrive, and causing a fair degree of excitement, which may eventually send prices up to a still higher point. The revulsion of sentiment which has taken place in the Tin markets is remarkable, and might prove lasting but for the severe lessons of the past, and the substratum of speculation which adds much of the artificial to this movement. Quite a business has been done here, with improving rates; thus English has risen 2½ francs and Straits 1½. We quote Banca, deliverable at Havre or Paris, 240; Straits, 225, and English, at Havre or Rouen, 225. Marseilles is quite firm in the midst of some speculative purchases. *Lead.*—While at the North Lead remains firm, because of its scarcity, large arrivals have been pouring into our Southern port of Marseilles. The time may now be near at hand when stocks will be replenished, even at the North. With these more doubtful features looming up, we have declined 1 franc at this center. We quote French, deliverable here, 59; Spanish, at Havre, 59; and English, at Havre, 58·50. The current spot quotation for Spanish at Havre has been officially raised to 56 francs. Marseilles, despite the more ample supplies alluded to, has remained steady in response to English advices. The quotation there is 54 francs. *Spelter.*—The demand is fully kept up, in England in particular, where large lots have changed hands to arrive from Breslau. The tendency is still a decidedly rising one. Here Silesian, deliverable at Havre, remains firm at 65, other good brands at Havre or Paris at 64. The Vieille Montagne Company has, since the 17th instant, raised the price of Sheet Zinc to 85 francs the 100 kilos. Silesian Spelter at Havre commands 64·50 to 65. *Iron.*—Nothing new has occurred in the French markets. The official press has put forward some schemes of increasing the French railroad system by some 10,000 kilometers, toward which the State would advance 50,000,000 francs, and feel sure of recovering therefrom some 35,000,000 in the shape of privileges. The private companies would gladly contribute their quota toward the realization of these plans. *Coal.*—Accounts from the various districts are conflicting; while the demand is good, English and German Coal has resumed competition with some vigor. At the North the outlook is good; at the Center and South this is less the case. Here there are large arrivals and light sales.

BELGIUM.

(Revue Universelle).

BRUSSELS, September 26, 1875.—*Iron.*—A fresh decline has taken place during the past three weeks, precipitated by lower offers which the John Cockerill Society has thought fit to make in a circular to its customers just issued. From abroad we have the news that the government of British India is about to raise the duty on imported Iron and its manufactures, while Turkey, on the contrary, for a term of fifteen years admits duty free steam engines and other motive power as well as accessories, when imported for the purpose of starting new industrial establishments. But the proprietors of the latter will have to draw up a list particularizing the machinery they intend to order under this provision. On the 6th proximo tenders will be opened at Dresden (Saxony) for 18,000 tons steel rails and accessories. *Coal.*—Although the aspect of the Coal market in Belgium has considerably improved during the month, expectations have not yet been fulfilled to their full extent. After such a prolonged stagnation it would, however, be unreasonable to expect too much all at once. The difficulties still to be overcome are not removed in a day, nor in a week or month. At all events, values have at length found their level; production shows a gradual gain, while stocks at the mines have dwindled down to a minimum. The moment evidently appears a proper one for the replenishment of supplies from dealers' hands, since it is pretty much certain that winter has in store for us higher prices.

GERMANY.

(Borsenhalle.)

HAMBURG, Sept. 25, 1875.—*Metals.*—The Metal situation in Germany has gone on improving. Stocks in the hands of the trade and consumers are not large, the demand is fair, stimulated by the knowledge that the crops have been secured in good condition, and that business has few obstacles to encounter on the road to a solid revival. Speculation is virtually dead, but we shall fare all the better for it in the long run. The *Copper* market has few changes to record; the dealings have been restricted, but prices remain firm. Copper is well upheld at Berlin on the basis of 90 to 93·50 marks, the 50 kilos, for English and Australian. At Stettin rates are unaltered within the range of 95 to 100 marks. Here we have remained quiet; Drontheim at 94; Minnesota, 110, and Quincy 100 marks. *Tin* has gone on improving in the German markets. At Berlin Banca is quoted 94½ to 95, and English 91½ to 92. Nothing is reported as having been done here. *Lead* has been uniformly strong. The quotation at Berlin is 23·50 to 24 for Tarnowitz, Hartz and Saxonian. At Stettin Spanish is quoted 26·50 to 27, and German, 23 to 25. The quotations here are as follows: German, 23·75 to 24·50; English Pig, 25·80, and Spanish, 26·10. *Spelter.*—The want of an available supply has hampered dealings; prices are strong. Good and best sorts Silesian are quoted at Berlin 24·50 to 25·50 at the works. Stettin is firm at 25 to 26. At Breslau, in a small way, there has been paid 23·50 to 23·60. We are nominal here at 24·90 marks. All the foregoing quotations are understood to be the 50 kilos.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, Sept. 26, 1875.—*Tin* remains firm, notwithstanding the restricted nature of transactions. In Banca some sales have been made at 53 guilders, and this is still offering. Delivery from the impending sale has been done at the same figure. The consumptive demand is insufficient. Billiton, in a small way, has brought 50 guilders the 50 kilos.

CHINA.

(Arnhold, Karberg & Co.)

CANTON, Aug. 27, 1875.—*Metals.*—*Lead.*—Stocks have been rather considerably augmented by recent arrivals, and as the trade demand continues insignificant, prices have gone in favor of buyers, closing rates exhibiting a fall of 10c. per picul. L. B. has today been sold at $7·65 per picul. *Tin* has sustained a further decline, and there is hardly any demand for the article. *Quicksilver.*—The inquiry for local consumption has quite subsided, but some business has been done for export to the North at about former rates. Sales for forward delivery are reported at $80 per picul. We quote: Lead $7·55 to $7·80; Tin, $22 to 23·50, and Quicksilver, Spanish, $100 to $110; California, $102 to $103. *Exchange* on New York, 5 months' sight, 4½ per cent discount.

EAST INDIES.

(Dummler & Co.)

BATAVIA, JAVA, Aug. 14, 1875.—*Tin.*—There were sold at auction on the 9th instant 9229 piculs Billiton at 52·58 guilders per picul, or, at the Exchange, of 11·95, equal to about £77. 11/ per ton, free on board without commission or freight, but inclusive of insurance. *Coal* is utterly neglected. A cargo of Australian, per Alice, was placed with difficulty at 16 guilders per ton, cash, delivered here from alongside, but to be weighed on shore. The cargo per Corlie is being stored. For English there is also very little inquiry, and reliable quotations are not to be given. *Freights.*—The inquiry for tonnage, although not active, is somewhat less dormant. For New York two small vessels have been secured. *Exchange* on London, 6 months' sight, 11·87½ to 11·90 guilders the £.

(Gilfillan, Wood & Co.)

SINGAPORE, Aug. 20, 1875.—*Tin.*—There has been little change. A small sale was made at $21·75 per picul, but the bulk of the business done has been at $21·90 to $21·92½. The Kate Carnie has been fixed for New York at £1. 5/ for Tin. The Bengal has sailed for New York with 1235 piculs Tin, and the Priam via London for New York with 652. For Boston there have been no fixtures. There have been shipped from the Straits for the United States from Jan. 1 to Aug. 1, 31,660 piculs, against 23,734, 19,741, 34,853, 30,919 and 36,258 in 1874-1870.

(Sandilands, Buttery & Co.)

PENANG, Aug. 23, 1875.—*Tin* has been in pretty large demand for China, and also in fair inquiry for India, whilst the demand for Europe has been somewhat quiet until just at the close, when some inquiry has been shown. The market opened firm at $21·75, but gradually gave way till $21·25 was touched, but only a trifling quantity changed hands at this figure. A reaction then took place, and the price advanced to $21·35, and subsequently to $21·50. The latter figure is now being offered, but sellers are holding off. Estimated stock in bazaar, 5000 piculs. The East Lomond, for New York, Aug. 19, took 1560 piculs Tin.

(Aitken, Spence & Co.)

COLOMBO, Aug. 31, 1875.—*Plumbago.*—There is a moderate demand from America, which supplies barely meet. Working of the mines in the interior is only carried on to a limited extent, dealers preferring to curtail operations in face of current prices. P. S.—No change to report. Very scarce and demand moderate. We quote, free on board, per ton, without freight and commission: Lump, 330; Chip, 180/; and Dust, 120. Freight to New York, 70/ per ton. Shipments from Ceylon to the Atlantic States from Oct. 1 to Sept. 4, 29,893 cwts., against 31,410 in '74; to England, 56,855; to the Continent, 1448; to Australia, 97; and to India, 21; altogether, 87,204. The Lelia Alice sailed for New York Aug. 31, and took 1110 cwts. *Exchange.*—1/10⅞ to 1/11.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, ENG., Sept. 27, 1875.

TRADE GENERALLY

does not alter very materially, but it appears to be growing very bad in the North of England finished iron departments. Many of the works in the vicinity of Stockton and Darlington have now been weeks without a single new order coming in, and are, consequently, likely to be stopped altogether unless a very different state of things is inaugurated, and that speedily. The plate mills had been rather better off for employment than their neighbors, up to a week or two back, but they are also gradually growing worse and worse, and are being laid off as the orders on hand are run through. Rail orders in Cleveland are only conspicuous by their absence, few of the establishments devoted to this class of ironmaking having had anything to do for some months past. In other parts of the country, however, the aspect of trade is hardly so gloomy, most of the iron works elsewhere having a succession of small commissions which keep the machinery in partial motion and prevent the men from starving or becoming idle. Even in South Wales there are not wanting a few tokens of a slight renewal of briskness, so far as rails are in question, as will be noticed by the remarks placed under that distinctive heading in another part of this communication. Summarizing the position as it appears at present, I should suppose that in the North and in Scotland the pig iron vendors are doing well on export orders, but that the make of iron there is on a very small scale. Elsewhere the trade may be said to be purely dull and hand-to-mouth.

THE RAILWAY JUBILEE.

As I write to-day there is being celebrated what is termed the Railway Jubilee, at Darlington. Darlington, I need hardly tell you, is in South Durham, and although a town of modern growth to a very great extent, has always had the reputation of being possessed of Quaker notions and proclivities. This may, perhaps, arise from the fact that the chief people of the town, the Peases and others, are of the Friends connection, and so have induced a large colony of those of the same persuasion to settle in the vicinity. To-day the town is very full of visitors from all parts of the country, and of varied social standing. In the leading thoroughfares Venetian masts have been erected with a copious display of bunting, Chinese lanterns, etc., in great profusion. As a first part of the public demonstration, I may say that the statue of Joseph Pease will be inaugurated, and then the exhibition of locomotives of all sizes and sorts (to be presently alluded to) at the works of the North Eastern Railway Company. In the evening there is to be a great banquet, given by the company just mentioned to some 1000 guests, including the Lord Mayor of London, Marquis of Ripon, Sir Charles Adderley (president of the Board of Trade), the Duke of Cleveland, and a host of other oratorical or commercial big guns, not to mention all the chief railway officials of the United Kingdom. To-morrow there will be numerous excursions to the works of the district, the whole of which will be opened for the occasion. Alluding to the engines exhibited, the special correspondent of the *Standard*, writing last night, says: "They have been arranged in rows on either side of the lofty and spacious engine shed, which has been made neat and festive by the aid of the paint pot and whitewash brush. There are upward of two dozen of them, dating in age from No. 1, the clumsy first-born effort of Stephenson's genius, to the spick and span new magnificent engine, numbered 1068, which was turned out of the Darlington shops, complete, in eight days, not two months ago. These specimens are placed side by side for the sake of the contrast. But the chronological order in which the various engines on show were built is otherwise preserved. The history of the locomotive, from the days when a speed of eight miles an hour was considered an achievement, to our own, when 'Wild Irishmen' and 'Flying Scotchmen' career over the country like disciplined meteors,

may be learned in the course of a half hour's walk in this building. Passing over the lesser curiosities displayed, such as sections of rails, models, the doorstep of the first railway booking office, and a locomotive which has journeyed the almost incredible length of 330,000 miles—a *bona fide* traveler that!—one is naturally attracted to the renowned old iron mare 'Locomotive.' There she stands, freshly furnished up in the place of honor she so well deserves. She is mounted on the original fish-bellied rails of cast iron, fastened by oak tree nails to stone blocks embedded in ballast. There were no sleepers in those times, and it is no wonder the gauge was sometimes lost and 'Locomotive' went off the line. These oak tree nails expanded when saturated by the rain, and invariably split the stone blocks, to George Stephenson's sore discomfiture. The extreme length of engine and tender is 24 feet; her weight in working order is 6 tons 10 cwt. The pressure of steam to the square inch is 24 lbs., and the four wheels, which are connected by welded metal between the spokes, are four feet in diameter. The tender carries 240 gallons of water and half a ton of fuel. A singular piece of mechanism she looks to modern eyes, with her bones, so to speak, all outside, and her queer high chimney projecting with a sweep, not unlike a swan's neck, in front of the body, and terminating in a vandyke top. The gauge is 4 ft. 8½ in., that being the width of the tramways used half a century ago for the carriage of minerals. Let us turn to the young giantess set cheek by jowl with 'Locomotive.' What a progress is there! She is over 44 feet long; her weight is 51 tons 6 cwt.; the pressure of steam to the square inch is 140 lbs.; the leading wheels are four feet in diameter, and the coupled middle and the railing wheels are six feet. Her tender carries 2400 gallons of water and six tons of fuel, and such is her power that she is equal to traveling a mile a minute. 'Locomotive,' it is true, cost but £400, and this latter cost £3000. A peculiarity of this splendid engine is the equality of weight on the axles, obtained by an arrangement of the wheel base, so that no dead weight is required. 'Invicta,' the next, an engine built in 1830, and sent by Mr. Cudworth, of the Southeastern Railway, is associated with an anecdote. She was intended to run from Canterbury, but the morning she was to enter on her duties the engine driver disappeared, and Mr. Fletcher, of Gateshead, who is still living, had to volunteer to take his place. The 'Invicta' has a cylinder, remarkably like a syringe in form, fixed outside the body on the side. We next come to 'Auckland,' built by Timothy Hackworth in 1839, which attained a speed of 15 miles an hour. Six wheels coupled are used in this engine. Improvements now crop up apace. The 'Dart,' constructed in 1840, has larger wheels, and travels 30 miles an hour. She is in active service on the Stockton & Darlington line to this hour, and the same wheels and gear are still employed, the boiler only having been renewed. There are some beautiful engines from the Shilton Works, and Berry & Co., of Liverpool, are championed amongst other samples of their make by 'Huddersfield,' a large engine in which steel tires and a copper semi circular fire box with dome top are introduced. Several engines designed by Mr. William Bouch are exhibited; but now there is such a luxury of really good locomotives, and we get so near our own generation, that it requires something very special to attract attention. The first tank engine will arrest the visitor for a moment, but he soon arrives at the contemporary 'drinkers of the wind,' and it must be a very prodigy of engineering skill that will evoke a cry of admiration. There is an exquisitely shaped light engine from Brighton, and some 'fraw customers' from the Caledonian network of rails, claim notice. But the prize engine of the lot seems to be the 'Colossus,' sent by the Northern, whose driving wheels are 8 feet 3 inches in diameter. Mr. Younghusband, of the Darlington Works, stoutly maintains that their engine, with four bogie wheels in front and driving wheels 8 feet in diameter, is not to be surpassed in conquering the difficulties of curves and heavy gradients, over which she can glide at a velocity of 60 miles an hour. But no good workman will disparage his own handicraft, and we must leave the palm of superiority to be decided as local sentiment prevails."

THE SCOTCH PIG IRON MARKET.

The Scotch pig iron market at Glasgow was firm during the whole of last week, warrants having fluctuated between 66/ to 67/3 per ton. Makers' irons went up several shillings per ton—somewhat irregularly, it is true—and is still maintained in price, despite the continued steady increase in the quantity which is held in Connal's stores. The total is now 58,526 tons, or an increase of 1489 tons for the week. There are now 114 furnaces in blast and 34 out. Pig iron for ballast is still held at 50/ per ton, alongside, in the Forth or Clyde. Freights to your ports are as under: New York, 5/; Boston, 14/; New Orleans, 5/, from Glasgow, and 6/ from Ardrossan; Baltimore, 5/ and 6/ respectively; Quebec, 12/; Philadelphia, 12/; Montreal, 12/, and Providence, 15/ and 14/. To Rio Janeiro, 27/6; Buenos Ayres, 30/; Monte Video, 25/, and San Francisco, 27/6. The comparative shipments from December 25, last, up to date, show an increase this year of 89,547 tons, the totals being 403,258, against 313,711 tons.

Writing from Glasgow, on Friday evening, September 24, Messrs. James Watson & Co, said: "We have again to report a firm market for Scotch pig iron, the opening price on Monday being 66/6, cash, and continuing since steady from 66/6 to 67/, cash, closing buyers 67/, sellers 67/1½. Shipments last week were 11,501 tons, against 14,226 tons in the corresponding week of 1874." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	67/6	65 6
Gartsherrie, "	78/	66/
Coltness, "	85/6	68/6
Summerlee, "	68/	65/6
Langloan, "	78/	67/
Carnbroe, "	68/6	65/6
Calder, at Port Dundas	76/	65/6
Glengarnock, at Ardrossan	71/	66/
Eglinton, "	66/	65/
Dalmellington, "	67/6	66/6
Snotts, at Leith	78/	67/6
Kinneil at Boness	66/6	63/

Messrs. Wm. Colvin & Co. (Glasgow, Sept. 28) say: "The pig iron market remained comparatively steady last week, a fair amount of business being done in warrants from 66/6 to 67/1¼, cash, sellers remaining at latter price on Friday afternoon. To-day the market has been rather excited, and an extensive business was done from 67/4½ to 69/, cash, closing sellers 68/10½, buyers 68/9. Transactions also took place at 66/3 and 66/6, month fixed. Owing to the sharp advance in warrants to day the undernoted quotations for makers' iron must be considered nominal."

	Deliverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	68/6	66/6
Gartsherrie "	77/6	65.6
Coltness, "	83/6	67/6
Summerlee, "	67/6	65/6
Langloan, "	78/	66/6
Carnbroe, "	68 6	66/6
Monkland "	68.6	66 6
Clyde "	68/6	66.6
Govan, at Broomielaw	68.6	66/6
Calder, at Port Dundas	78/	66/6
Glengarnock, at Ardrossan	71/	66/6
Eglinton, "	66/	65/
Dalmellington,"	67/6	66/
Carron, at Grangemouth	65/	..
Carron, " specially selected	67/6	..
Shotts, at Leith	78/6	67/6
Kinneil, at Bo'ness	66/	63/
Bar Iron	£8. 0/ to £8. 10/	
Nail Rods	£9. 0/.	

SHIPMENTS.

	Tons.
Week ending Sept. 26, 1874	11,359
" Sept. 25, 1875	10,164
Decrease	1,195
Total Increase for 1875	88,352

Messrs. John E. Swan & Brother's prices current:

Glasgow Brands.	Furnaces B'wing, 114	Furnaces Out 34.	Furnaces Built, 157.	Prices. No. 1.	No. 3.	No. 4
Gartsherrie	13	3	16	77/6	66/	..
Coltness	12	0	12	..	68/	..
Summerlee	6	1	8	68/	65/	64/
Langloan	7	0	8	78/	66/	65/
Govan	4	0	5	67/	65/	65/
Calder	2	2	8	78/	66/	65/
Shotts Bess'mer	2	0	2	80/	..	..
Shotts Ordinary	3	1	4	78/	67/	..
Carnbroe	4	2	6	68/	65/	65/
Wishaw	2	0	3	..	..	..
Monkland	6	0	6	67/	65/	..
Chapelhall	3	0	3	71/	..	..
Clyde	5	0	6	67/6	65/6	..
Quarter-Clyde	4	0	5	67/	65/	63/

* f. o. b. Glasgow, 1/ per ton, extra.

Glasgow Warrants, 3-5 No. 1; 2-5 No. 3, g. m. b., 67/1½.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock	7	2	9	70/6	65/6	65/6
Ardeer	4	1	5			
Eglinton Brand'd	6	2	8			
Lugar Egl'n	4	0	4	66/	64/6	66/
Muirkirk	3	0	3			
Portland	3	3	6			
Dalmellington	6	2	8	67/	66/	60/

EAST COAST BRANDS—*f. o. b. in the Forth.*

Kinneil	3	1	4	66/	62/6	60/
Almond	2	1	3	66/	63/	60/
Carron Select'd	3	3	6	67/6	..	..
Carron Ordn'y				65/	..	..
Lochgelly	0	4	4	..	..	..
Lumphinnans	0	2	2	..	..	..
Bridgeness	0	2	2	..	..	..

THE SHEFFIELD TRADES.

Another week has brought about very little appreciable alteration in the state of trade in the district. Everybody is still complaining of very nearly unprecedented dullness and paucity of orders, yet there are few who confess to being entirely without orders on hand of some kind or other. This is, at all events, correct as applied to the iron works which are devoted to the merchant branches and to many other collateral departments of the trade. It is, however, hardly applicable to the foundries in North Derbyshire and South Yorkshire, seeing that all the leading establishments of that kik are doing good businesses. It is true that they each and all have coal and ore on the spot, by means of which great advantages they are enabled to quote lower prices than those firms which have to buy their pig iron in the open market. Stavely, Clay Cross, Sheepbridge, Renishaw and Thorncliffe are all of this class, and all are well engaged, compared with other works in different branches of the industry. Stavely, I hear, is still turning out large lots of water pipes of various sizes for the Sheffield and other companies, beside a good production of general castings, and at Thorncliffe there is a steady output of builders' and general constructive castings.

Pig iron has again been steadily firm, doubtless in consonance with the stiffening tendencies of the Cleveland and Scotch markets, the chief run having been on foundry numbers. Cleveland foundry, No. 3, is about 59/ here, and a good local iron of the corresponding class is several shillings dearer. Hematite pigs are in moderate—but only moderate—request, at about the following nominal quotations: Maryport "hematite," No. 3, 77/6; No. 4, 77/6; No. 5, mottled and white, 77/6; "Bessemer," No. 1, 80/; No. 2, 77/6; and No. 3, 77/6—all with the usual 2½ per cent. off for prompt cash; Millom Bessemer, No. 1, 80/; No. 2, 77/6; No. 3, 75/; ordinary No. 3, 75/; No. 4, 74/; No. 5, 75/; mottled, 80/; and white, 75/; on four months' terms, all with 2½ discount for cash down. There is a little improvement in the inquiry for Bessemer material in the rough for cutlery and certain specific purposes, and I also learn that one of the principal local iron works companies has secured a tolerably good steel rail order, which is now in course of execution.

At one large establishment the demand for boiler plates—which had been fairly brisk up to within a short time ago—has so diminished that the management have altered the plant so as to make it suitable for dealing with small sized armor plates. Ship plates (iron) are also in but moderate request at present, and those of this class, it is believed, must inevitably succumb to steel ones at no distant date. On Saturday last a petition was filed in the Sheffield Bankruptcy Court in the affairs of Mr. Francis Day, accountant, coal merchant, trading as the Borough Coal Company, and, with other persons, lately carrying on business as the Cardigan Iron, Steel and Wire Company. The liabilities are about £10,000.

The dispute between Messrs. John Brown & Co. (Limited), Atlas Works, and their puddlers has just now been settled in favor of the men, although it had been tentatively arranged that work should have been resumed on Monday. At the Parkgate Works, near Rotherham, the puddlers, shinglers, rollers and some of the millmen are out on strike owing to the disputed wages settlement, to which I alluded in my last week's communication. These men allege that they have always been paid 6d. per ton more for puddling than the Staffordshire men, and, therefore, now refuse to be put on equal terms. At the Northfield Iron Works, near Rotherham, where a similar dispute had arisen, the managers determined to pay the men the back money, that is to say the 5 per cent. reduction taken off since August 23d, in consideration of their resuming operations at once. At the Normanton Iron Works a dispute on the same grounds exists, and will, I understand, be arranged on the same basis as that which shall be ultimately arrived at at Parkgate.

The colliers' strike at Butterley continues, and from all I am able to gather, is quite as far from being settled as at its outset. The men at the Roundwood Colliery, near Rotherham, struck work on Monday in consequence of the proprietors having stopped 3d. per man per week, which had previously been allowed as payment for oil for the safety lamps, since these have been used in the pit. Other disputes on the same point are likely to arise at neighboring collieries shortly. The coal trade is better in respect of the best household qualities, owing to the fact that the London buyers have already begun to obtain their winter supplies. The steam and gas coal departments are a trifle brisker, several good gas coal contracts having just been placed or renewed. Up to the end of August the Great Northern has carried 629,056 tons, and the Midland 1,064,839 tons to London.

The cutlery branches are not changed in any particular respect since last reported upon, but in some of them I continue to hear of slight accessions of activity. There is, for instance, a good inquiry for best qualities of razors, for best table cutlery, shoe knives, butcher knives and good pen cutlery. The American fall orders for these description of goods are not heavy, but such houses as Wilson's, Butcher's, Rodgers' and George Wostenholme's have fair commissions from their old customers, both in the United States and the Dominion. Australia also yields us fair orders.

ANOTHER IRON FAILURE.

On Thursday last there was a meeting of the creditors of Messrs. Samuel Freeth & Edward Whitting, trading as Samuel Freeth & Co., at the Phœnix Iron Works, Millwall; the West Drayton Iron Works, West Drayton, and at 60 Grace Church street, London, as iron manufacturers. The liabilities were set down at £30,824, of which the 91 insecured creditors represented £26,465, and on bills £7866. The assets were not precisely known, but set down at £10,276.

BIRMINGHAM AND SOUTH STAFFORDSHIRE.

The iron trade of the town and district indicated above is not brisk, but in some respects it is not quite so depressed as it has been. This is probably the result of the little pressure which exists in the shipping orders, and will not be enduring. Best bars are held with some show of firmness at £10, and common bars of a tolerably servicable character at £8. Sheets for galvanizing and corrugating purposes are changing hands at £11 to £11. 10/, and a few lots of boiler plates at £10. 5/ to £10. 15/. The quarterly meetings are now close at hand, but it is not anticipated that any great alteration is likely to be made. I gather that machinery is being largely introduced into the lock, bolt and curry comb industries of the Willenhall district with very marked success. Treating of the local hardware trades, the Birmingham *Post* reports:

"There is a slight but steady increase of activity from week to week in the manufacturing trade of the town, though in many cases orders are being executed more rapidly than they come in. In most branches, however, the difficulty is to keep pace with the requirements of consumers, which, though rarely of large extent, are nearly all urgent. This is more especially the case with the home trade, where the practice of ordering from hand to mouth appears to be on the increase. Stocks throughout the country are exceedingly small, and a large proportion of the orders coming in are to meet pressing requirements. Factors complain very much of the additional labor thrown upon them by the smallness and urgency of the "lines" received from travelers, combined with the difficulty of obtaining goods from the manufacturers. For this latter difficulty, which materially checks the development of trade, factors think that the diminished hours of labor and the irregularity of the workpeople are mainly responsible. Money is not so abundant in the home trade as could be desired, but there is little or no unsoundness. In regard to export, the new orders coming in are of small extent, but a good deal of eagerness is manifested by merchants trading more especially with the markets of Northern Europe to get off their consignments. With the United States business continues very dull. About a month ago a slight spurt occured in the orders for chains, traces, guns, locks, and sundry descriptions of heavy hardwares; but this activity was of very brief duration, and current orders from the States, which are chiefly upon light fancy goods and tin plates, are of very limited extent. With the Spanish West Indies a good trade was done in the spring and summer, but orders from that quarter are now falling off before the successful activity of American competitors. This competition appears to be extending rapidly to all the markets in which English edge tools are sold, and recent advices from South and Central America testify that American made tools are daily growing in favor, and superseding those of English make. There is little or nothing doing with Canada at present, but trade there is reported to be in a very sound state, and so soon as the grain stocks are realized and money set free a brisk revival of demand may be looked for. In Brazil stocks of hardware goods are being gradually worked down, and as the exchange continues favorable trade prospects in the market are recovering. Manufacturers in the hardware trades generally are well employed, and but for the tightness of the labor market would have little cause for complaint. Prices are very firm all round. Even the hollow-ware manufacturers, who were confidently expected to make some concession this quarter in recognition of the decline which has taken place in fuel and iron, have resolved to make no change. In some classes of malleable iron goods prices are a little more elastic, but, on the whole, quotations are very steady. A new German government contract for nickel, for coinage purposes, has just been concluded with the local nickel refiners, and the effect of this, of course, is greatly to strengthen the price of the metal, which enters so largely into the German silver and electro-plate manufactures of the town. There is no great animation at present in the birding gun trade, but the larger factories devoted to the production of military weapons are in full operation on German, British and other government contracts. The ammunition trade also continues buoyant. In the jewelery trade prospects are improving, but, excepting in the chain branch, there is no great activity yet. The chandelier, lamp and gasfitting trades are all very busy, and the demand for lamp glasses, globes, &c., contributes not a little to the buoyancy of the glass trade. Iron plate workers generally are well employed on buckets, kettles, frying pans, &c. The fancy trades are active, in anticipation of Christmas requirements."

SOUTH WALES.

A considerable—or rather, I should say, comparatively considerable—number of shipments of railway iron have been made during the past week. On Thursday 1000 tons went by steamer Longhurst for Russian Finland, and the Madeline is to follow with 1600 tons. The Hooghly has taken 1600 tons to Rio de Janeiro, and a further lot of 1500 tons is to follow. Dowlais appears to be the best employed establishment.

THE METAL MARKETS.

The metal markets opened quietly but firmly last week, the commencing figures being: Chili bars, £81 to £81. 10/; Wallaroo, £93; Burra, £89. *Tin*, £84 to £85; Australian, £82 to £82. 5/; and *Lead*, £23 to £23. 5/.

Messrs. Von Dadelszen & North say: "*Copper* in the early part of the week was quiet. On Wednesday a large business was reported, and yesterday about 200 tons were done at £81. 5/ to £81. 10/ for g. o. b. Nothing reported in Australian, Wallaroo nominally £93, and Burra, £89. 10/. English rather cheaper. Tough, £88 to £90; manufactured, £94. *Tin* in strong demand, at better prices; Straits sold at from £83. 10/ to £85, both on the spot and to arrive. Australian sold freely, at from £82 up to £83. 10/ on the spot, and from £81 to £82. 10/ for arrival; Banca steady, 53 fl.; Billiton, 50 fl.; English steady, £90. *Tin plates* in rather better demand; prices unaltered. *Lead* steady, £23. 5/. *Spelter*: Silesian nominally £25 for ordinary, and £25. 5/ to £25. 10/ for special brands. *Quicksilver* again advanced, and the importer sells very sparingly at £14; from second hands, £14. 10/ to £14. 14/ has been paid."

The *Mining Journal* remarks: "Although there is not much material alteration in the position of the metal market to comment upon this week, still there are indications once more apparent of a tendency to improve, which, as time wears on, may develop more decidedly, but not to the return of normal activity until the opening of the shipping season next year. Prices generally tend to firmness, notably in the tin market, which has been rising for some time past, and is now from 30/ to £2 higher than last week. Copper, on the other hand, is slightly easier. Still the appearances are in favor of the maintenance of values generally. The past month must have effected some positive good to the community, although not unattended with inconvenience to individual sufferers, some of whom have courted the calamities which have fallen upon them by the rashness of their proceedings and the unwarrantable character of their transactions. Others, who deserved a better fate, have been drawn into the vortex; but the result is an effectual clearance of unsound speculation. The credit system has received a death blow, and those markets which have been upheld by long credits have naturally suffered most. *Copper.*—The market has been very limited, and sales have been effected with difficulty. There has been but little change in the quotations for Chili bars, which stand at £81 to £81. 5/. Picked brands, £82 to 82. 10/ cash. English tough very quiet at £88; best selected, £89 to £90. India sheets are quoted £94, and yellow metal 7⅝ to 8¼. *Lead.*—There is no change to report in the position of this metal. Good soft English pig is quoted £23 to £23. 5/, and soft Spanish without silver, £22. 12/6 to £22. 15/. *Zinc.*—London rolled has realized £29. *Spelter.*—Silesian rules £24. 15/ to £25, and English hard £18. 15/, difficult to procure. *Quicksilver.*—At the beginning of the week sales were effected at £13. The price in first hands was then advanced to £13. 10/, and on Wednesday to £14. *Tin.*—The market opened firm, and sales were effected in Straits tin at £84 to £84. 10/, cash, and £85 middle of October open, and £85. 10/ October delivery, and the same price September and October shipment. Small parcels of Australian changed hands at £81. 10/ to £82. 5/. As the week wore on the market became more active, and a large business was transacted daily at full prices. Straits tin has changed hands at £85 cash, and Australian has advanced to £83. 10/. English bars £90. *Tin Plates.*—The market is quiet, and at present prices makers are indifferent about booking orders, there being little or no profit."

Messrs. Sandford & Bird's prices current (London): "*Tin* has continued to improve both in demand and in price, and closes at the best: English block and ingot, 90/ per cwt.; bar, 91/ per cwt.; Straits, £85 per ton; Tasmanian, £83. 10/; Australian, £83 per ton. Tin plates show no improvement in price, but there seems more disposition to buy. Melyn charcoal, I. C., per box, 28/; Afan, I. C. 26/; Cymro coke, I. C., 24/; best charcoal, I. C., 28/; charcoal, I. C., 26/; best coke, I. C., 25/; coke I. C., 22/ to 23/; terne plates, I. C., 21/, per box; black plate, I. C., 18/ per cwt.; Black taggers, 14x10, 450 sheets, 112 lb., 30/ per box; charcoal tinned sheets, up to 72x36, 38/ per cwt.; coke tinned sheets, up to 72x36, 35 per cwt. Liverpool figures mainly unchanged.

A Remarkable French Stove Foundry.

In a recent issue we gave a description of a remarkable "stove grate foundry" in England. We now give an account of a still more remarkable stove foundry in France, near the town of Guise, for which we are indebted to a writer in *The Artisan* of recent date:

Napoleon III. was on the throne of France when, in 1859, Monsieur Adrien Godin planned and built the first parallelogram of his now celebrated palace for working men and women. As by degrees the beautiful structure rose and developed into a wonderful receptacle of the people and their household economies, the matter got noised about, and sentiments of jealousy began to inspire those calumnies that were rife when I paid my first visit to France. Before this time the organization of labor in England and Germany had already become terrible to the crowned heads of Europe, because these organizations were observed to tend toward the *co-operative* or communistic rather than the *competitive* system governing political institutions, and whose legitimate offspring the working classes found to be monopoly. Napoleon kept spies on the lookout for these societies abroad, and forbade their organization in France. Workingmen were rigorously forbidden to collect together in larger numbers than a half-dozen at a time; and the jealousy of the government was hightened on seeing this bold step of Godin in attempting, alone and single-handed, to do that which the people themselves were not allowed even to assemble and take measures to do. Having the monopoly of the press, and it being treason for poor people to organize a press of their own, they, of course, encountered no difficulty in disseminating all sorts of slanders, both against Godin and his industry.

The fact that the plan of this edifice and its surrounding industries had been refused in 1867 at the great World's Exposition gave the monarchists a semblance of proof against the Familistere, although, in reality, the board of management of that exposition had been secretly instructed to turn a deaf ear and award no medals to the dreaded revolutionist of the Social Palace of Guise. The word went out that Godin was a rich manufacturer who employed a large number of hands, and he had devised this hotel merely to board and accommodate them; that he had no other wish in his mind than to get the largest amount of profit out of his men; and consequently, like any other slave master, it behooved him to keep them well in order to get this quantity of labor from them. It was further reported that he was a hard hearted skinflint; that he had repudiated his wife and kept a mistress; and that the good, quiet people of Guise were incensed against him.

These rumors were made so plausible, and other labor movements elsewhere were so pressing, that I did not visit the Social Palace of France until the close of my second journey through Europe. It was in 1870. The war with Prussia had begun, and I was under arrest, when, weary and faint with my imprisonment at Nesle, and still under strict surveillance by the gens-d'armes of France, I arrived at Guise provided only with letters from Garrido, Castelar and Dr. Henri Couturier, and a letter of safe conduct from the chief of police and the *juge of paix* of Nesle, having proved my American citizenship. I mention this because my examination on arrest for treason against the government had been especially severe on account of papers and letters showing that I was on a visit to the hated Social Palace of Godin, and as my letters *de sauf conduit* only granted a *quinzaine de jours* of sojourn, I was to be "eliminated" from France after a two weeks' visit. Since the overthrow of that falsifying, inquisitorial government, the people have made the much misrepresented hero of the Familistere a member of the National Assembly and Chief of Industries in France and Belgium.

A careful study of this man and his industry reveals the fact that, instead of the palace being a mere creation to accommodate the industry itself, as was alleged against him, the reverse is the exact truth. The palace for happifying the hearts of the tradesmen of France, of whom he himself is one, was the early day dream of M. Godin. But, unlike most theorists and inventors of improvements in the world, he possessed a rare practical talent. He was, as he himself describes it, "born a financier-revolutionist." He had a supreme contempt for falsehood, and an equal contempt for kingcraft and priestcraft, which he believed to be the abettors of falsehood. With these feelings rankling in his bosom, the young man worked at his trade as machinist during fifteen years, and all this time, according to his own account of his life, he was studying how to verify this dream. "The workingman deserves to live in a palace," thundered the stern mechanic; "he shall have it." After several unsuccessful minor efforts to set up business in the line of machinery, he invented a heating range, and also obtained sundry patents for enamelling stoves and other heating apparatus, and commenced on a limited scale on the border of the quaint, minature old city of Guise, near the Belgian frontier. Although there is no railroad within a distance of 15 miles on the one side or 7 on the other, there is a canal within about 3 miles, which, with the aid of cartage, was made convenient for sending off his manufactures, and a brisk business in stoves was soon the result.

The business flourished. Everything the man undertook seemed to yield its hundredfold. In a few years, from 1840 to 1850, the stove manufactory of M. Godin-Lemaire assumed note in France. A few years more, and stoves, furnaces, heaters and ranges were known and in demand in Belgium, Holland, Germany and Switzerland, if the commercial frontispiece, "*Fonderies et manufactures de chauffage de Godin-Lemaire*" embellished the models. The shops consequently had to be enlarged, and a little town began to thicken around the factory. A purchase of nearly 50 acres of land, including the site of the palace, was, in course of events, effected, 30 of which are now occupied by the industry alone. Whole streets, a half mile in length are to be seen, each side lined with the buildings belonging to the vast manufactory.

In Europe, great manufactories like this are called *Usines*, a term in French in itself explicatory of relative magnitude as to manufactories. A mere manufactory covering an acre or two of ground, may rest unknown to the commercial world, contenting itself with such trade as it may come in contact with, and it is thrifty or it perishes, is steadfast or transient, as fortune dictates. But the usine dictates its own fortune. It is an institution when it covers an area of 10, 20, or 50 acres—becomes a usine—and is able to cope with competitions, employ the best draughtsmen, salesmen and artisans, pay them for a lifetime, watch and conform to the march of improvement, and mold and carve its own future, profiting by, rather than succumbing to, the vicissitudes it encounters in its career. The usines of M. Godin cover about 30 acres, and are a model of economy and cleanliness.

M. Godin, although the creator and proprietor of this institution, that has, per-force its great merits, buffeted its way through the inimical intrigues of a military despotism for more than thirty years, is desirous of leaving it to the people. He once, in a conversation with me, said: "I do not own it. I did not make it. I gave my ability in judgment and labor for this industry, and, with the aid of others, it has become what it is. I claim, therefore, one equal share with the 2000 it is capable of housing and employing. I have my home in one of the apartments, like any of the rest, and would not change my residence in it for the best chateau or pavilion in the realm. But in the present ignorant and unorganized condition of the working class it would be dangerous for me to lose my control over it."

Still, Godin is of firm conviction that the whole institution, palace, usines, schools and pleasure grounds belong to society, and should all be operated and perpetuated for and in the common interest of all members or citizens thereof. His careful, thoughtful use of words shows that he is truly a savant in social theories, especially in the practical application of them; and he regards the two terms, co-operation and communism, as synonymous.

When the usines are in full blast there are fully 2000 men and women (mostly men) employed; and as the entire population of the city of Guise does not exceed 8000, they form a very considerable share of its inhabitants. All of them, on account of their families, cannot find room in the palace. Some live in the city, while others own little places adjacent, on the road to Landrecies. These are employed irrespective of the palace and its attractions. They are engaged without respect to nationality, although they are mostly French. They are intelligent, and remarkably independent in their notions, and are, so far as may be observed by a visitor, free from the truckling, time serving spirit satirically known in American politics and business houses as flunkyism. The last two things a Frenchman will yield for the sake of petty advantages is honor and good living. These are his luxuries, and he will not cringe even for the best rooms in the palace. For this reason a good deal of discussion is kept up among the working people in regard to the relative comforts of inside and outside living. This discussion acts very favorably in enlight-

ening the people generally. Indeed, the great superiority of the rooms in the palace outweighs the prejudices in favor of the old modes of life, and is serving as a model for others in building new residences and in repairing old ones. It has had the effect to set the people in a thinking mood, and to teach them that "time-honored" things are not always the best, but often the worst. The employes of the usines are naturally up to the average of Frenchmen, but circumstantially far in advance on account of this continuous discussion, which acts as an educator by sharpening the mind, in questioning the actual, relative merits between the old and the new. M. Godin is himself a severe critic, and, proud of the superiority of his invention, is best pleased when the relative merits of the old fashioned life and the new are most keenly laid naked and bare by this discussion, which often amounts to dispute between persons of different opinions employed on the premises. Such is the peculiar character of the French people that they refuse to rely upon each other; and though always jovial and social, there is a predominant spirit of self-reliance or independency, which, although not equivalent to restraint, has, in some respects, an effect to isolate them as a people from the constant intimacies of business association necessary to co-operative labor and co-operative living that forms the almost wonderful element of success in the Englishman and the German. Had Godin established his industrial palace in England or Germany, it would, with the usines, long before this, have been converted into an *industrial copartnership*. But it was built in France; and the prominent peculiarity of the Frenchman is his irritable instincts of individualism—his mercurial nonconformity with dictum. He is religious, but not theological; extremely social, but not confidential; so ingenuous and frank as to make him affable and polite almost to a fault, yet not credulous enough but that he questions his neighbor's motives. He possesses a palliatory refinement whose glossy conciliative begs and receives a pardon before anybody is offended. The Frenchman, in fact, is too personally independent to be a co operator with his neighbor in the social scale, but has precisely the right constitutional characteristic to be a communist.

The exact cost of this manufactory cannot be easily estimated. It was more the product of a spontaneous evolution than of original design. Its value from a commercial point of view varies like all other property—with business prosperity or adversity. The aggregate cost of the manufactory was *something over* 4,000,000 francs. Its shafting and finishing apparatus, furnaces, etc., are driven by numerous steam engines, some very large, others small, set about at various distances from each other. The engines are of solid, compact form, without any great exterior finish. The cost of this machinery used in the manufactory foots up to about 1,600,000 francs. Situated between the workshops and the Palace are the gas works, which cost 75,000 francs in their erection. Great manufactories like this make their own gas, because they are generally apart from the city gas works, and also because their own requirements are large enough to make a collateral business of it. The gradual enlargement of the business caused the encroachment upon new territory, and whole streets have consequently been formed that had to be paid for by M. Godin himself. The bridge over the river Oise was not constructed without expense, and the probable cost of the streets and bridge will not fall short of 200,000 francs, although no account of these expenses are given in any of his estimates of the Familistere. It is safe, then, reckoning in all these accessories, to estimate the cost of this manufactory at over $1,000,000, gold, expended in comparatively cheap times, and under such auspices as would ensure more than double the amount that a similar sum of money could be made to produce in the United States. Such a manufactory in full operation in any town in the State of New York, could not cost less than $2,000,000, and the factory, with the palace attached, would require more than $3,000,000 in gold to construct.

There appears to be no particular difference in the hours and customs of the workmen in these shops from those of any other in France. The object of M. Godin was not to introduce a change in the manner of labor, but of *habitation* and its surroundings. I have conversed with him on subjects of industrial reform, and find him thoroughly in sympathy with anything that will ameliorate the drudgery of the French workingman. Indeed, he has made it a study, and is not too old yet, perhaps, to give his countrymen another practical lesson on this important subject. But Godin commenced poor. He had to live. He was obliged to create the million of dollars with which to build a model habitation for himself and the workmen who toiled with him in the manufactory. It required all his gains as director of that industry to erect the palace, without attempting to improve or even question the system under which he and his friends, like everybody else in France, were simultaneously toiling and suffering. The severity of discipline, in the stove manufactory of Godin-Lemaire was as rigid and exacting in all its operations as the trading system of Mr. A. T. Stewart or of Stephen Girard. M. Godin expressed to me his regret that this should be so, but fixedness of purpose was with him as inexorable as fate, and the only road to success. This unflinching obedience to a method marked out caused him many enemies among the trades, which fact was taken advantage of by Napoleon and his government as a means to inflame the calumnious rumors against him.

Since the good-souled, magnanimous public have lionized the founder of the Social Palace, it may not be amiss for me to link in a word in conclusion concerning private life in the apartments of the directors. M. Godin is the sole proprietor and superintendent; Monsieur E. Godin, his son, is the general business director of the manufactures; Mlle. Marie Moret, a beautiful blonde of about twenty-eight, living with her mother in the palace, is the director of the educational department. A lady of refinement and finished education, she divides her time between her duties at the schools and her still more arduous labors as amanuensis for M. Godin in the compilation of his books on "Sociology," whose recent publication is making a profound sensation. The old gentleman has no wife. He keeps, "as a coefficient in the principle involved," a splendid carriage, and the full equipage of a French gentleman; and in his customary ride is as apt to invite a workingman as any other person. Usually, Mlle. Moret accompanies him. In my happy sojourn I was never forgotten, and we made a very genial trio in our morning excursion in search of wild flowers, tufas and encrinites. Neither must David the *cocher* and Pierre the *cuisinier* be forgotten. Everybody in the palace is a fixture for life. The old man never forgets his people. He lives with them in the finest palace, rides with them in the finest of carriages, sets for them the best of tables, receives alike the intellectual magnate and the poorest castaway, works with them in one of the proudest usines in Europe; and for his stern, unflinching goodness, they have voted him a member of the Parliament of the French Republic, and made him Chief of Industries for France and Belgium.

Light and Heavy Tools.

A writer in the *Crockery and Glass Journal* discourses sensibly on the subject of tools as follows:

There are great differences between the English and French mechanics and artisans, in regard to the use of heavy or light tools in manual labor. The French make all their hand tools light, and handle them with great dexterity and skill. Their hammers are light, their saws, planes, drills and all similar implements would not stand the heavy work which would be put upon them in the hands of an English or American workman. The English tools are all heavier, and require more strength in the workman to wield them effectively. The results are seen in the productions of the two nations. France produces nothing requiring great power in its construction. The great steamships and ironclads are on the Clyde, and not on the Rhine or the Tiber. French work is ligh, delicate, tasteful, partaking much of the personal qualities of the workmen. English and American productions partake more of the nature of the machine which wrought it out, and reflects credit rather upon the inventor or maker of the machine than upon the skill of the workman who operates it.

The great end after which all improvements aim, is the maximum of power, combined with the minimum of material or weight. The man who shovels English soil will use only an American shovel. The man who cuts English wood must have an American axe. They are both lighter, and will do the same work, with less weariness to the workman. An Englishman who wanted to make a present of the best axe to be found in England to Gladstone, bought an American axe. A man shoveling dirt with a shovel one pound heavier than it should be, will lift 6000 pounds more in a day of ten hours than he would do with a suitable shovel. All this strength is wasted.

The same is true of machinery. So simple a thing as an unlubricated pulley is felt in the furnace, and the cost of the coal is augmented. Every useless pound in a truck or carriage takes vitality from the horse which draws it, and costs the owner many extra dollars for his keeping. The man who pulls an oar in the great boat races at Saratoga, puts himself in training and reduces every ounce of surplus flesh. The racing horse carries not one extra ounce of fat to burden him in the effort to win. Yet workingmen will carry through half their lives 50 pounds more flesh than is needed for the best working condition, a burden which tells against his efficiency and personal comfort through many years of his industrial life. These may seem little things, but whatever wastes power, increases expenses and burdens the laborer, is not a little thing.

Mussels on the Great Eastern's Bottom.

Henry Lee writes in *Land and Water* concerning an examination he has made of the bottom of the Great Eastern: "There were traces of a few barnacles near the level of the water line, especially about the stern post, and between it and the rudder, and the latter itself, as well as the propelling screw, was covered with the common acorn barnacles or "chitter;" but all the rest of the hull usually submerged was clad with an enormous multitude of mussels, clustered together in one dense and continuous deposit extending over a surface of 52,000 square feet of iron plates, and in some parts six inches thick. Mr. Beckwith had made a calculation, which I was able to verify with him, of the total weight of the mussels thus accumulated. It was found by careful experiment that the average weight of those on each square foot was from 12 to 13 pounds; therefore the vessel was encumbered with not less than 300 tons of living marine animals adhering to her—mussels enough, in fact, to load with full cargoes two ordinary collier brigs. Although the mere weight of this mass would not, perhaps, much effect the buoyancy of a vessel of 25,600 tons burden, it will be readily understood that the friction of such a rough, jagged incrustation passing through the water would materially diminish her speed. As these troublesome adherents were scraped off with shovels by workmen employed under contract to remove them, they were carried away by cartloads and boatloads and hurried along the shore of the haven. In some localities they would have been heartily welcomed by the fishermen as valuable bait."

Mr. C. W. Stoddard has written an entertaining description of what he calls a picturesque railway, from which we quote as follows: There are 40 tunnels between Pisa and Genoa; the railroad threads the coast so closely that but for its fortunate elevation above high water mark it would incrust with the salt crystals that plunge shoreward in the spray of many a gale. So frequent are these tunnels between Pisa and Genoa, and so long the galleries, which are, in other words, tunnels with rows of large windows or arches hewn out of the wall against the sea, that it seems almost as if this picturesque and stupendous chiseling were the work of the sea and the storm. The coast is very abrupt; cliff after cliff juts out over the water like the wings in a theatre, all looking very much alike, and a half dozen of them usually being visible at one time. The cliffs are hung with creeping vines and decked with ferns and aloes. They are each one a picture, and from each I got some pleasant little surprises, for as the train emerged from the tunnel I was sure to find a kind of toy city, exceedingly small but complete in itself, clinging to the bluff ahead of us, and not very many rods distant. In some cases we had scarcely time to get used to the daylight blazing all along the coast, before we were dragged into the pitchy blackness of the next tunnel. Sometimes we stopped in the midst of a tunnel or gallery and were amazed to find passengers alighting—at least I was, for it was all a novelty to me—and when I looked out of the car window I found that the bluff above us was split in two, and through the chasm very narrow and very steep stairs cut in the rock led up to the summit, when the edges of the houses were visible, with their blank walls glowing in the sunshine. The next moment we were rushing from cliff to cliff, above smooth stretches of sea sand as yellow as gold, and below a long slope of the hills inland, sprinkled thickly with villas even to their summits, where the clouds leaned heavily and threatened rain.

The Jagger Iron Company's Affairs.

—The stockholders of the Jagger Iron Company, of Albany, held their annual meeting at that city on the 7th instant, and after the regular election of officers submitted a report of the financial condition of the concern. This gives the indebtedness at $275,000, including a mortgage of $50,000 held by the National Savings Bank, and one of $88,000 held by the Pennsylvania Coal Co. The property, works, etc., owned, amount to $553,000, and are said to be in excellent condition, but work cannot proceed in consequence of the embarrassment entailed by this heavy debt. The main trouble appears to have been the result of selling iron at too low a figure at the commencement of the enterprise. After a lengthy discussion as to the best means for making an amicable adjustment of the claims against the concern, it was decided, in lieu of levying an assessment, to issue a mortgage on the property to the amount of $275,000. These bonds are to be sold at not less than 90 cents, and will bear 7 per cent. interest. This bond will be subject to the present mortgage of the bank and coal company, and when taken will place the concern once more in a condition to resume work.

Three of the Lebanon county, Pennsylvania, anthracite furnaces are about blowing in, viz.: "North Lebanon Number Three" (located at Lebanon, and owned by Hon. G. D. Coleman), "North Cornwall" and "Bird Coleman." The last two named are new, and are located at the Cornwall Ore Hills, being operated by the Coleman heirs. They are each 15 feet bosh and 52 feet high, and are complete in every detail. New hot blast stoves are being added to the Henry Clay furnaces in Reading, Pa.

Among the few inventors who have had the satisfaction of beholding the universal acceptance and commercial success of the offspring of their genius must be mentioned M. Jean Englemann, who died a few days ago in Paris. The problem of printing in colors was solved by him, and, indeed, the improvements he introduced in various branches of lithography justify the remark of a French journal that the whole history of the progress of this art in France is summed up in his name. Beside the important invention of chromo-lithography, the modification of this process known as *diaphanie*, and applicable to the decoration of glass, is due to the initiative of M. Englemann. This eminent lithographer also devoted much of his time and energy to the reproduction of archæological works.

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.
Copper—₩ ton.						
Best Selected	91	0	0	92	0	0
Tough Cake & Tile	88	0	0	89		
Sheathing and Sheets	94	0	0	95		
Bolts	96	10	0	94	0	0
Bottoms	93	0	0	0	0	0
Old	80	0	0	0	0	0
Australian, Wallaroo	92	0	0	93	0	0
" other brands	89	0	0	90	—	
Chil bars, g. o. b	31	0	0	82	0	0
Wire ₩ lb.	0	0	11¾		—	
Tubes "	0	1	0¾		—	
Brass—₩ lb.						
Sheets	0	0	9	0	0	10
Wire	0	0	9¾	0	0	0
Tubes	0	0	9¾	0	0	11¾
Yellow Metal Sheathing	0	0	7¾	0	0	8
Sheets	0	0	7¾	0	0	0
Spelter—₩ ton.						
Foreign on the spot	25	0	0	0	0	
" to arrive	25	0	0			
Zinc—₩ ton.						
In Sheets	30	0	0	31	10	
Quicksilver—₩ bottle	14	0	0			
Tin—₩ ton.						
English Blocks	50	0	0	0	0	0
Ditto Bars (in bris.)	91	0	0	0	0	0
Ditto Refined	92	0	0	0	0	0
Banca	93	0	0	0	—	0
Straits	86	0	0	86	10	0
Australian	88	0	0	84	10	0
*** Tin Plates**—† ₩ box.						
IC Charcoal	1 qual.	1	10	1	11	0
IX "	1 qual.	1	0	16	1	17	0
IC "	2 qual.	1	6	0	1	8	0
IX "	2 qual.	1	13	0	1	14	0
IC Coke		1	1	0	1	8	0
IX "		1	7	0	1	9	0
Canada Plates ₩ ton.		14	10	0	15	0	0
" at works		14	0	0	15	0	0
Iron—₩ ton.						
Bars Welsh, in London		7	15	0	8	—	0
" to arrive		7	12	6	0	0	0
Nail Rods		8	5	0	9	10	0
Nail Rods, Staff'd in L'don		8	15	0	9	10	0
Bars		9	0	0	9	5	0
Hoops		10	5	0	10	10	0
Bars at Works		8	5	0	9	5	0
Hoops ditto		9	5	0	11	0	0
Sheets, single, and plates		12	0	0	12	10	0
Pig, No. 1, in Wales		5	0	0	6	10	0
Refined metal ditto		7	0	0	8	0	0
Bars, common ditto		7	0	0	7	5	0
Do, merchant, Tyne or Tees		7	15	0	8	0	0
Ditto, Railway, in Wales		6	10	0	7	0	0
Ditto, Swedish, in London		14	10	0	15	0	0
To arrive		14	10	0	—	0	0
Pig, No. 1, in Clyde		3	0	0	3	5	0
Ditto, f.o.b., Tyne or Tees		2	15	0	3	0	0
Ditto, Nos. 3, 4, f.o.b		2	13	0	2	15	0
Railway Chairs		4	0	0	4	10	0
" Spikes		12	0	0	13	0	0
Indian Ch'coal Pigs in L'don			0	0		0	0
Steel—₩ ton.						
Swedish, in kegs (rolled)			—			—	
Ditto (hammered)		19	5	0	0	0	0
Ditto, in faggots		20	0	0			
English, spring		18	0	0	22	0	0
Lead—₩ ton							
English Pig, common		23	0	0	—	0	0
Ditto, LB		23	5	0			nom.
Ditto, WB		24	0	0	0	0	
Ditto, Sheet		24	10	0		0	0
Ditto, Red Lead		25	0	0	—	0	0
Ditto, White		30	0	0	32	0	0
Ditto, Patent Shot		26	10	0	27	—	
Spanish		22	10	0	22	15	0

* At the works, 1s. to 1s. 6d. per ton less. Terne plates 2s. per box below tin plates of similar brands.
† Add 6s. for each X.

HERCULES IRON CUTTER.

No. 1, weight	16 lbs.,	cuts ⅜x2	inch, or ⅜	inch round or square	.....	Price	$25·00
No. 2, "	165 "	½x3	" ½	" "	.....	"	50·00
No. 3, "	350 "	¾x4	" 1	" "	.....	"	75·00

This is by far the most powerful Iron Cutter in use which can be worked by hand, having three times the capacity of any other machine which sells at the same price. The No. 3 machine occupies a space of 12x30 inches; when in use additional space must be had for the lever to work in. We send two sets of knives with each machine—one for square and flat, the other for round iron and steel. By using the knives adapted to it round iron is cut without being flattened. One man can cut the largest size iron named above, but two would be required for steady work. It does not take a minute to change the knives or to shift the machine from large to small sizes.

AUGUSTA, GA., March 3, 1875.

MILLERS FALLS CO.—Enclosed find draft for amount of invoice, January 7. We would have sent the amount before, but did not have an opportunity of trying the Iron Cutter until a few days ago. It is one of the best machines we ever saw. Yours, truly, MOORE & CO.

Office of the ATHENS FOUNDRY AND MACHINE WORKS,
ATHENS, GA., February 18, 1875.

H. L. PRATT, President.—Dear Sir: Enclosed find draft made payable to your order by Messrs. Childs, Nickerson & Co., in payment for Iron Cutter. We have put our Cutter to good service, and find it cuts readily 1⅝ round, and 3½ x ⅝ square iron. C., N. & Co are pleased with theirs, say it will save many a blow and cold chisel in their iron house.

Truly, yours, R. NICKERSON, Agent.

We make a satisfactory discount to dealers, and warrant the cutters to do all which we claim for them. Send for prices.

Millers Falls Company,

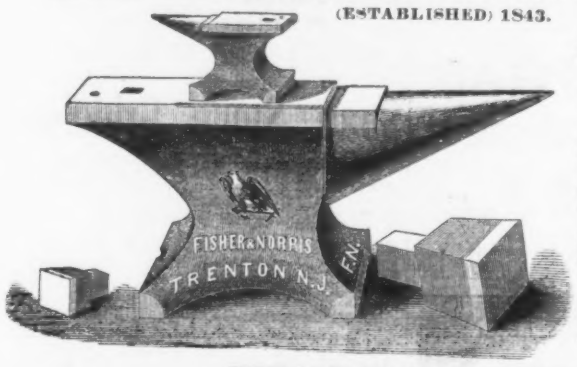
No. 78 Beekman Street, New York,

Sole Proprietors and Manufacturers of the

Barber Self-Fitting Bit Braces, Millers Falls Vises,
Improved Angular and Ratchet Drilling Machines,
TUBE SCRAPERS, FAMILY TOOL CHESTS,
Patent Adjustable Tool Holders, Mitre Boxes, Ratchet Braces, Breast Drills, etc.

The Fisher & Norris Eagle Anvil Works.

(ESTABLISHED) 1843.



These Anvils are manufactured at the oldest Anvil Factory in this country They are *superior* to the best English, or other Anvils, on account of the peculiar process of their manufacture (invented and used only by this concern), and from the quality of the materials employed.

The best English Anvils, after a time, become hollowing on the face by continued hammering in use, on account of the fibrous nature of the wrought iron—causing it to "settle" under the face.

The body of the Eagle Anvils being of crystallized iron, no such settling can ever occur; and the steel face, therefore, remains perfectly true. Also, it has the great advantage that being of a more *solid* material, and consequently with less rebound, the piece being forged receives the full effect of the hammer, instead of a part of it being wasted by the rebound, as with a wrought iron anvil. An equal amount of work can, therefore, be done on this Anvil with a *hammer one-fifth lighter* than that required when using a wrought iron anvil which is more elastic.

The working surface is in *one piece* of JESSOP'S BEST TOOL CAST STEEL, which, after being accurately ground, is hardened and given the proper temper for the heaviest work. The *horn* is covered with and its extremity made *entirely of steel.* The body of the Anvil is of the strongest grade of American iron, to which the cast steel face is *warranted to be thoroughly welded and not to come off.*

REDUCED PRICE LIST. ANVILS weighing 100 lbs. to 800 lbs., 11c. per lb.

Smaller Anvils, ("Minims.")

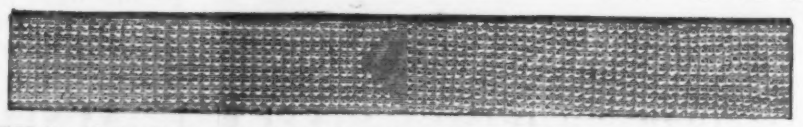
No.	0	1	2	3	4	5	6	7	8	9
Weighing about	10 lb.	15 lb.	20 lb.	30 lb.	40 lb.	50 lb.	60 lb.	70 lb.	80 lb.	90 lb.
Price,	$3·50	$4·25	$5·00	$3·50	$6·50	$7·50	$8·00	$9·00	$10·00	$10·50

THESE GOODS ARE SOLD BY THE GENERAL AGENTS (with special discounts to the trade).

New York.—Messrs. J. CLARK WILSON & CO.—RUSSELL & ERWIN MANUFACTURING COMPANY.—Messrs. HORACE DURRIE & CO. Boston.—Messrs. GEORGE H. GRAY & DANFORTH. Philadelphia.—Messrs. JAMES C. HAND & CO. Baltimore.—Mr. W. H. COLE.

FISHER & NORRIS, Trenton, N. J.

EMPIRE FILE WORKS.



WARRANTED CAST STEEL HAND CUT FILES and RASPS.

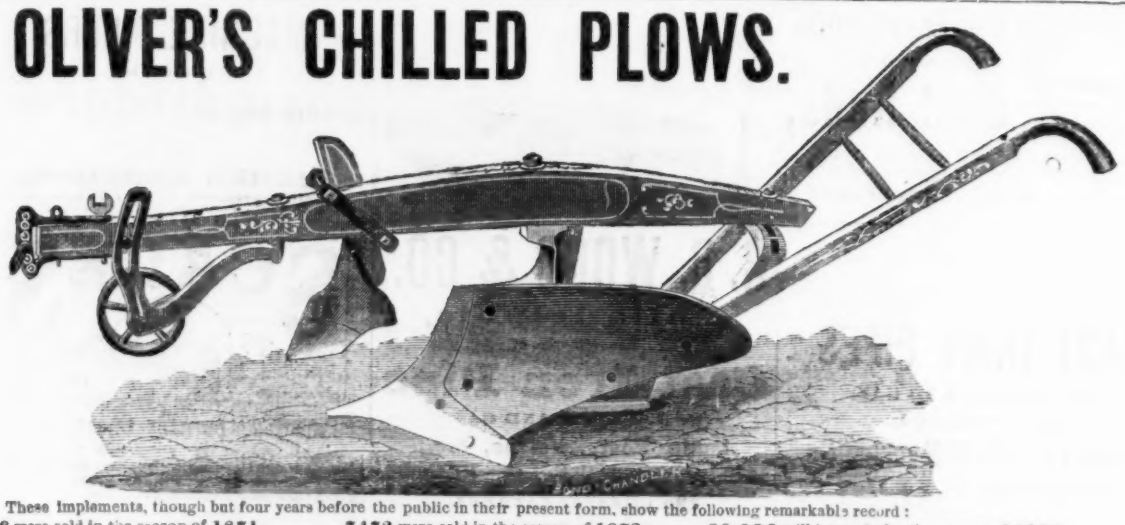
WM. GARDNER'S SONS,

(Successors to the late Wm. Gardner,)

SOLE AGENTS,

Send for Price List. No. 575 Grand Street, NEW YORK.

OLIVER'S CHILLED PLOWS.



These implements, though but four years before the public in their present form, show the following remarkable record:

1506 were sold in the season of 1871. 7472 were sold in the season of 1873. 30,000 will be made for the season of 1875.
3049 " " " 1872. 14,976 " " " 1874. For full descriptive circulars, address,

SOUTH BEND IRON WORKS, South Bend, Ind.

Ecton Mills Genuine London TURKEY EMERY.

TRADE MARK.

ABBOTT & HOWARD, Agents for the United States.

81 John Street, New York. 35 Oliver Street, Boston.

MORAN'S BAKING PAN

makes even tough meat and poultry tender, juicy, rich, and flavory; makes splendid bread, increases the weight, saves cost in a month. Prices: 8x12 in., bakes 8 lbs., $2; 1·x14, bakes 12 lbs., $2·50; 10x16, bakes 16 lbs., $2·75; 10x16, bakes 20 lbs., $3·25; 12x16, bakes 25 lbs., $3·50. A liberal discount to the trade. Send for a circular.

J. A. LOCKE, 32 Cortlandt St., N. Y.

ZERO

REFRIGERATOR.

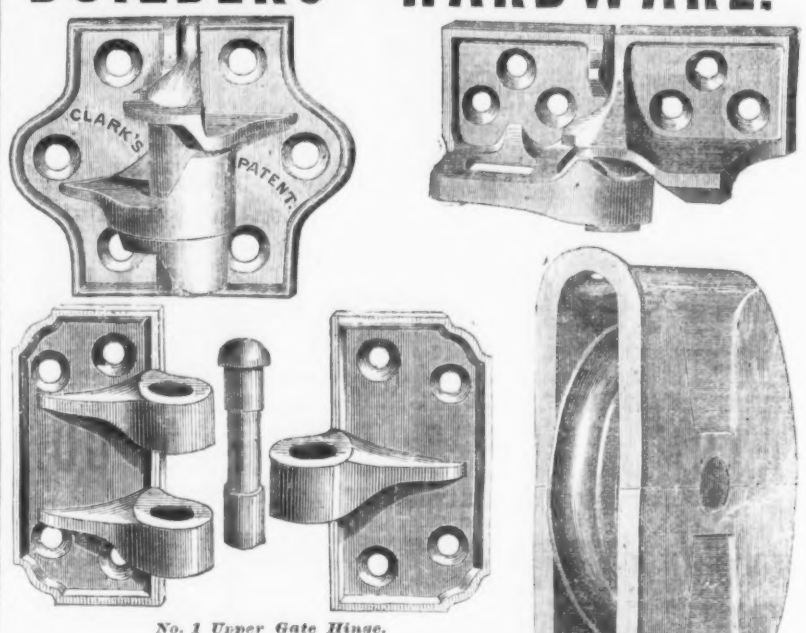
With Water, Wine and Milk Cooler, is the best Meat, Fish, Fruit, Ice and Health Keeper in the World. 30,000 in use. Call or send for catalogue.

ALEX. M. LESLEY, Manufacturer,
226 West 23d Street, N. Y.

CLARK & CO.,

MANUFACTURERS OF

BUILDERS' HARDWARE.



No. 1 Upper Gate Hinge.

Send for Illustrated Catalogue and Price List.

BUFFALO, N. Y.

STAFFORD MANUFACTURING CO.'S Stencil Combinations.

Containing: Stencil Alphabet, Figures, Can Stencil Ink and Brush.

For marking boxes, barrels, bags, and packages for shipment. Printing all manner of showcards, notices, signs, numbers, prices, &c., and other purposes too numerous to mention. Instructive and amusing for boys.

WHOLESALE PRICES.

Size.		Size.	
⅛ in., per dozen	$6·00	1⅛ in., per dozen	$10·00
¾ " "	6·50	2 " "	13·00
1 " "	7·00	2½ " "	18·00
1½ " "	9·00	1½ " with lower case..	15·00

An Illustration of sizes sent on application.

For sale by Hardware Dealers and Stationers.

No. 66 Fulton Street, New York.

MACK & CO.

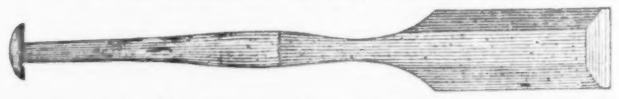
Successors to

D. R. BARTON & CO.,

At the Old Stand, 136 Mill St., ROCHESTER, N. Y

Sole Manufacturers of the

D. R. BARTON & CO. BRAND OF



Carpenters' Coopers' and Pump Makers' TOOLS.

Large Knives and Barrel Machinery.

All Tools made by us are stamped D. R. BARTON & CO.,

All goods stamped **D. R. Barton & Co.**, are made at the Old Works, and by the old men, from the Best English Steel, manufactured for us by Thos. Firth & Sons and Wm. Jesson & Sons, and fully warranted.

Goods stamped **D. R. Barton** are not made at the Old Works of the company, but by a new stock company, formed about the time of Mr. Barton's decease.

IRON BLOCK PLANE.

No. 110. 7 1-2 Inches Long, 1 3-4 Inch Cutter. $1·00.

STANLEY RULE AND LEVEL COMPANY, Manufacturers,

Factories, New Britain, Conn. Warerooms, 35 Chambers St., N. Y.

GET THE BEST.

HALL'S Sudden Grip VISE.

The Quickest,
Most Convenient, and
Most Complete
VISE ever devised.

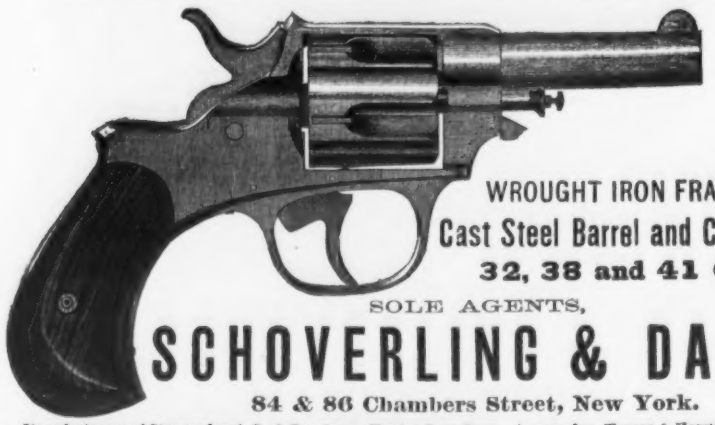
A Push closes and grips. A pull opens the jaws to any extent. The Swivel is Automatic, will swing on the table to any angle and fasten itself. Made in the best manner of the best material. Send for a Circular. **AGENTS WANTED.** *Address,*

THOMAS HALL,

411 Fulton Street, - - - BROOKLYN, N. Y.

Manufactured by CHARLES PARKER, Meriden, Conn.

Forehand & Wadsworth's Double-Action



WROUGHT IRON FRAME.
Cast Steel Barrel and Cylinder.
32, 38 and 41 Cal.

SOLE AGENTS,

SCHOVERLING & DALY,

84 & 86 Chambers Street, New York.

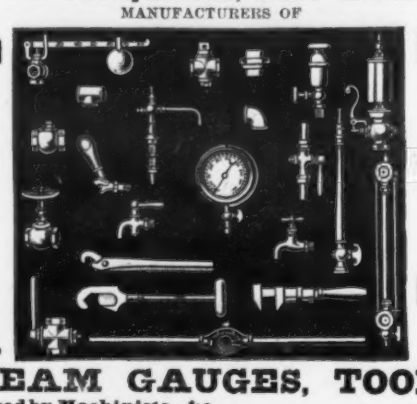
Manufacturers of Standard and O K Revolvers, Charles Daly Guns. Agents for Wesson & Harrington, J. P Clabrough & Bro. Importers of **Guns, Gun Material, &c.**
Illustrated Catalogue furnished to only those whom we know to be in the trade.

EATON, COLE & BURNHAM CO.,

58 John Street, New York.

MANUFACTURERS OF

Wrought Iron **PIPE,** Cast Iron FLANGED PIPE, **Cast Iron** RADIATORS and BOILERS.



Brass & Iron **STEAM** Gas & Water FITTINGS. PLUMBERS' MATERIALS.

STEAM GAUGES, TOOLS,
And all Supplies used by Machinists, &c.

FLORENCE

Florence Steel Skate, Price $1.00.

Florence All-Clamp Skate, Price $3.50.

Florence Clamp and Strap Skate, Price $2.00.

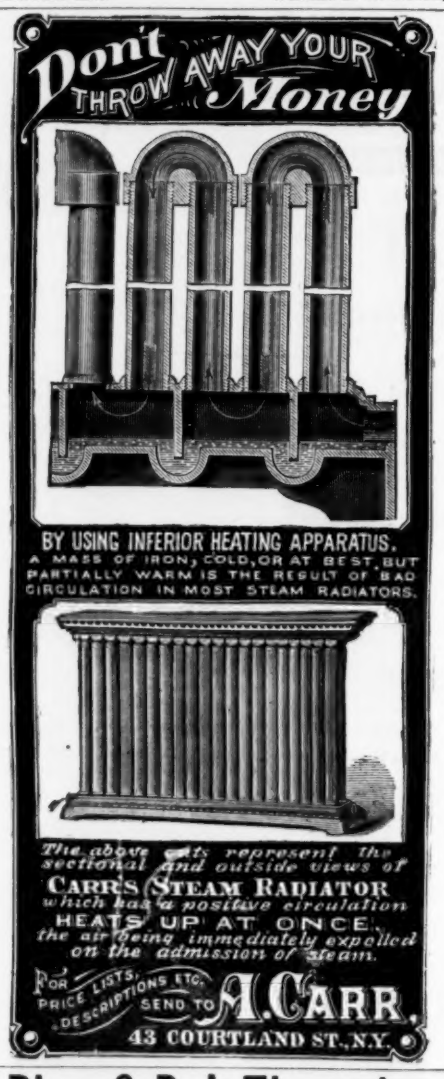
SKATES.

MANUFACTURED BY THE
FLORENCE SEWING MACHINE COMPANY,
FLORENCE, MASS.

THE FLORENCE SPRING SKATES, the Most Elegant and Perfect Skate in the Market. FLORENCE STEEL SKATES, "The Skate for the Million."
Every Skate Warranted Steel and free from any Imperfection.

☞ **CAUTION!** Cast Iron Skates are now being offered to the trade, made in imitation of, and often mistaken for our $1.00 Steel Skates. These Cast Iron Skates can easily be broken with the hands. All persons are hereby cautioned that we shall prosecute infringers of Letters Patent No. 154,176, Aug. 18th, 187 ; and reissue of same, No. 6410, May 4th, 1875, granted to Oliver Edwards, under which the Florence Steel Skate is manufactured.

THE FLORENCE SEWING MACHINE COMPANY.
☞ Send for Illustrated Price List. WILLIAM B. HALE, PRESIDENT.



Portable Pipe & Bolt Threader & Cutter

PRICES FROM $80 UP.

Address, EMPIRE MFG. CO., 48 Gold St., N. Y.

For Sale by

REDFIELD, BOWEN & WALWORTH CO., Chicago, Ills.
BULL & CO., Indianapolis, Ind.
McHENRY & CO., Cincinnati, O.
JOSHUA HENDY, San Francisco, Cal.
REUTER & MALLORY, Baltimore, Md.
WALWORTH MFG. CO., Boston, Mass.
RAHM & HUNTER, Richmond, Va.
LOVEGROVE & CO., Phila, Pa.

Pipe, Fittings, &c.

WROUGHT IRON INDESTRUCTIBLE ENAMELED PIPE

For Water, Gas, Sewage & Soil Pipe.

Manufactured Solely by

NATIONAL TUBE WORKS CO.,

Also Lap Welded Steam & Gas Pipe & Boiler Tubes.

Tubing & Casing for Artesian, Oil & Salt Wells (with Patent Protecting Coupling),

A Specialty made of Large Wrought Iron Lap Welded Tubes, 8 in. to 14 in. diameter.

MACK'S PATENT INJECTOR, ETC.

Works and Offices at BOSTON, MASS., and McKEESPORT, PENN.

OFFICES AND WAREHOUSES,

New York, 78 William Street. Chicago, 112, 114 & 116 Lake Street.
Cincinnati, 119, 121 & 123 Pearl Street.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS

For STEAM, WATER and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized

PLUMBERS' MATERIALS.

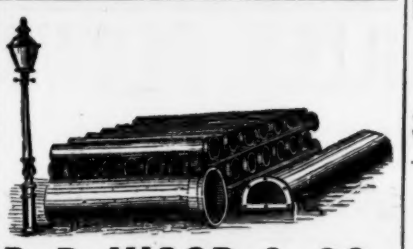
Illustrated Catalogue sent by express to the Trade on application.

Factory, Paterson, N. J. 56 John Street, N. Y.

WM. ESTERBROOK
Wholesale Manufacturer of
Coal Hods,
FIRE SHOVELS, Etc.
311 Cherry St., PHILADELPHIA.

CAST IRON PIPES

FOR WATER AND GAS.
Branches Retorts, &c.
Warren Foundry & Machine Co.,
PHILLIPSBURG NEW JERSEY.



R. D. WOOD & CO.,
Philadelphia,
Manufacturers of
Cast Iron Pipe
FOR WATER AND GAS.
Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants.
400 CHESTNUT STREET.

GEORGE BARNES & CO.,

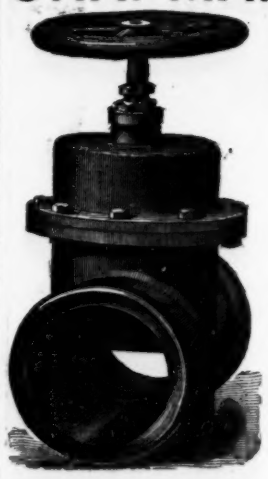
Manufacturers, Syracuse, N. Y.

ENCAUSTIC TILES.

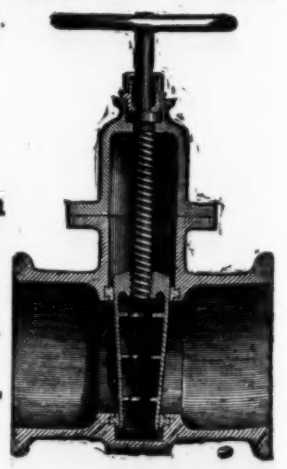
ALEXANDER FINDLAY,
Importer.
99 MAIDEN LANE, N. Y.
Sole Agent in the U. S. for
CRAVEN, DUNNILL & CO., (Limited.)

CHAPMAN VALVE MFG. CO.,

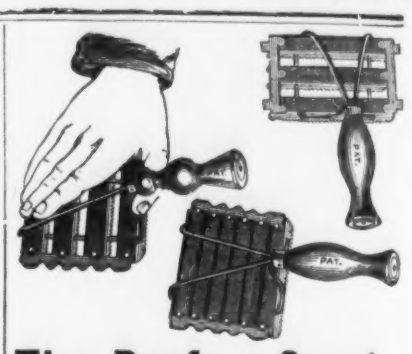
77 Kilby Street, Boston.



Water,
Gas
AND
Steam
VALVES.
Hydrants.



Send for circular.



The Perfect Comb.

We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb*. It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

THE LAWRENCE COMB CO.
Factory and Office,
382 2d Ave., cor. 22d St., N. Y.

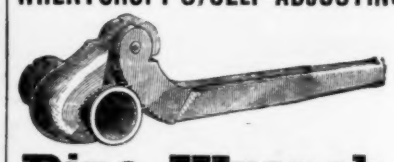
Isaac S. Williams & Co.,
728 Market St., Philadelphia,
WHOLESALE PRICE LIST
OF
Soap Stone Griddles,
HOOPED WITH GALVANIZED IRON.

10 inch	Round		per dozen,	$ 6·50
12	"	"	"	9·00
14	"	"	"	12·00
16	"	"	"	15·00
16	"	Oval	"	9·50
18	"	"	"	11·50
20	"	"	"	13·50
22	"	"	"	16·00
24	"	"	"	18·00

Liberal discount to Jobbers.

WM. S. CARR & CO.
Sole Manufacturers of
CARR'S
Patent Water Closets,
PUMPS,
Cabinet Wood Work, Vases, &c
106, 108 & 110 Centre Street,
Factory, Mott Haven, New York.

J. AUSTIN & CO.,
168 Fulton Street, N. Y.,
Proprietors and Manufacturers of
WHEATCROFT'S SELF-ADJUSTING



Pipe Wrench,
AND
Scripture's Funnel Top
MACHINE OILERS.
Dealers in
STEAM AND GAS FITTERS TOOLS.

RIEHLE BROTHERS,
Ninth Street, near Coates, Philadelphia.
New York Store, 93 Liberty Street.
Pittsburgh Store, 285 Liberty Street

"Patented" Furnace Charging Scale.
Double Beam R. R. Track Scale, Compound Parallel Crane Beams, &c. Patented First Power Lever Wagon Scales. Testing Machines any capacity.

The Iron Age Directory

and index to Advertisements.

PEEKSKILL FIRE BRICK WORKS.
Established 1831.
HORTON & MABIE,
Manufacturers of
Fire Brick of all kinds,
STOVE AND RANGE LININGS
of every description. Linings for Cupola or Foundry Furnaces. Blocks, Tiles, McKenzie Cupola Brick &c.
FIRE CLAYS, FIRE SAND & FIRE CEMENT.

BLACK LEAD
CRUCIBLES.
Manufactured by
ADAM NEWKUMET,
1537 & 1539 N. Front St., Phila., Pa.,
For Steel, Brass, Nickel, Copper, Bronze, &c.
Equa. o any in the market, and all guaranteed ☞ Keeping a full stock of all sizes on hand, and being confident o giving *entire satisfaction* we respectfully ask consumers to give us a trial.

A. HALL & SONS, Perth Amboy
ESTABLISHED 1856
HALL & SONS, Buffalo, N. Y.
ESTABLISHED 1866.
FIRE BRICK
of reliable quality for all purposes, manufactured of the best New Jersey Fire Clays. Also, ROCKINGHAM WARE, YELLOW WARE, Fire Clay, Fire Sand, Known Ground Fire Brick, and Diamantine Building Brick.

BROOKLYN CLAY RETORT AND Fire-Brick Works,
Van Dyke Street, Brooklyn, N. Y.
E. D. White, Surviving Partner of the late firm of J. K. Brick & Co.

Manhattan Fire Brick & Enameled Clay Retort Works
ADAM WEBER, - - Proprietor.
Office, 633 E. 15th St., N. Y. Clay Retorts, Enameled for Gas Houses; Retorts for burning raw bone and re-burning bone for Bone Black. Fire Bricks, Flues, Blocks, Cupola and Range Bricks of all shapes and sizes. The best fire clay from my own Clay Beds at Perth Amboy, N. J.

Brick Presses,

BRICK PRESSES,
For Fire and Red Brick,
PATENT STEAM GEARING
For grinding Clay for Red or Fire Brick, and a kinds of **Brick Machines** in general.
Works, 1819 Germantown Ave., Phila.
GEO. CARNELL.

Oldest and Largest Establishment of the kind in the U. S
F. L. & D. R. CARNELL,
1844 Germantown Avenue, Philadelphia
Manufacturers of Pennsylvania Brick Machine Little Giant Pipe Machine, Fire and Red Brick Presses, Clay Wheels, Tile Machines, Stampers, Grinding Pans. Brick Yards fitted out for running by steam or horse. Heavy and Light Castings. Send for circular.

PERSEVERANCE
Iron Works & Machine Shop.
MARCUS SCHANTZ,
Having established himself in the Iron and Machine Business in **Water St., Perth Amboy**, is now prepared to execute all orders in machinery, such as STEAM ENGINES, BRICK MACHINES, BRICK PRESSES AND TILING MACHINERY. Also, Steam Fitting, and Iron and Brass Castings, &c., furnished in the shortest time, and in the best and most workmanlike manner.

MILLER'S BRICK PRESSES,
Established, 1844.
Clay Tempering Machines
AND BRICK MAKERS' TOOLS.
Factory, 309 S. 5th Street, Phila. S. P. MILLER

With Disston's Saws. 4 Sizes.

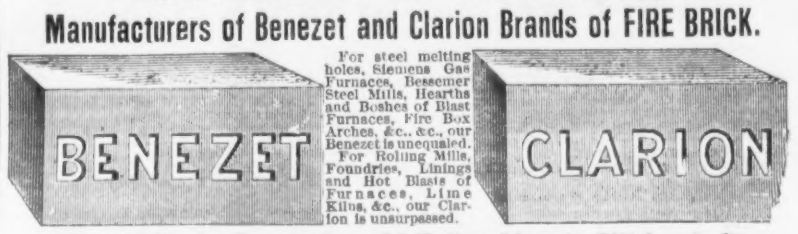
Sold by Hardware Trade.
LANGDON MITRE BOX CO.,
Send for Circular. *Millers Falls, Mass.*

JASPER E. CORNING,
Manufacturer of
WIRE GOODS.
Coal, Ost, and Meal Sieves, Galvanized Iron and Brass Riddles, Masons' Screens. The "Ready" Barrel Head Ash Sifter, and all other descriptions of Wire Goods.
58 Cliff Street, New York.

PUMP AUGERS and REAMERS
A SPECIALTY.
1870.  1875.
Solid Cast Steel Pump Augers
Wycko's Pat. U. S. Worm Augers, any size, 9 to 10 ft. long, for carrying off cups.
Send for Price Lists to
CHAS. E. LITTLE, 59 Fulton St., N. Y.

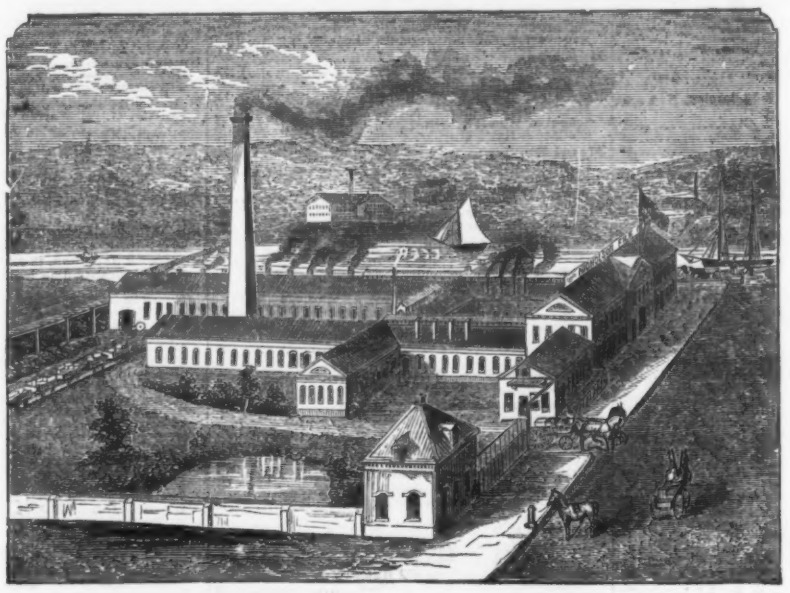
CHASE MACHINE CO.,
Manufacturers of the
Chase Patent Governor,
Haskell's Patent Alarm Pump for Vessels
AND
IMPROVED PUMP FOR LAND USE.
No. 36 Charlestown St., BOSTON.
L. E. CHASE, Box 1055.

BIRMINGHAM, ENGLAND
SAMUEL A. GODDARD & CO.,
Commission Merchants and General Agents execute orders for British manufactures on the lowest terms, and collect and forward goods for a very moderate payment. Agents for the sale of North Staffordshire Iron of a standard quality.

STAR FIRE BRICK WORKS.
HARBISON & WALKER,
Manufacturers of Benezet and Clarion Brands of FIRE BRICK.


For steel melting holes, Siemens Gas Furnaces, Bessemer Steel Mills, Hearths and Boshes of Blast Furnaces, Fire Box Arches, &c., &c., our Benezet is unequaled. For Rolling Mills, Foundries, Linings and Hot Blasts of Furnaces, Lime Kilns, &c., our Clarion is unsurpassed.
Office and Works, Twenty-Second & Railroad Streets, Pittsburgh, Pa.

Philadelphia Fire Brick AND Clay Retort Works,
AND KENSINGTON FIRE BRICK WORKS
Office, 23d and Vine, Philadelphia.
PHILIP NEWKUMET,
Successors to JOHN NEWKUMET, Proprietor
manufactures 9-inch Fire Bricks, Tiles, and Blocks for Rolling Mills, Blast Furnaces, Foundries Gas Works, Lime Kilns, Glass Houses, &c., &c
Articles of every description made to order short notice, and in a very superior manner.
"CLAY RETORTS FOR SUGAR HOUSES."



DEALERS AND CONSUMERS
OF FILES
SHOULD PURCHASE THE
Nicholson or "Increment Cut" File
FOR THE FOLLOWING REASONS:

First.—They are made from the best quality of File Steel.

Second.—Each File undergoes a careful inspection after each operation, by critical inspectors, and none but perfect work allowed to pass.

Third.—They are cut by the **"Increment"** or **irregular cut,** therefore combine the advantages of both Hand and Machine work.

Fourth.—They **will finish finer** than Files of any other make of same degree of coarseness.

Fifth.—They **will not "pin"** or scratch like hand-cut Files.

Sixth.—The **"Increment cut"** File, by our records, **will remove more stock with a given number of pounds applied** than any other File with which we are acquainted

Seventh.—All Files under seven inches are **put up in boxes** of one dozen each, and neatly labeled.

Eighth.—The large stock carried by us, combined with our superior facilities, enables us to fill the largest orders at the shortest possible notice.

Ninth.—We are constantly making careful tests of our Files by delicately constructed machinery, which **automatically records** the **actual power applied,** forward, backward and downward, at each stroke of the File, also the number of strokes, combined with the work performed, enables us not only to judge of the **quality of our Steel for wear,** but **also of the cutting qualities** of the File, and the ease (expressed in pounds) with which a given amount of work can be accomplished.

Finally.—Our Files **are warranted** to be **hard, well cut and sound.** They are exclusively used by many of the largest Railroads and Machinists in the country—and the vigorous growth of our reputation, not only for making a good article, but of **our ability to furnish a good article cheap,** is evidenced by the large number of Dealers and Jobbers who are handling our Files exclusively.

NICHOLSON FILE COMPANY, Providence, R. I.

SOLD BY HARDWARE DEALERS GENERALLY.

B. KREISCHER & SON.,
New York Fire Brick & STATEN ISLAND CLAY RETORT WORKS,
Established 1845.
Office, 58 Goerck Street, cor. Delancy Street
East River, New York.
The largest stock of Fire Brick of all shapes and sizes on hand, and made to order at short notice.
Cupola Brick, for McKenzie Patent, and others. Fire Mortar, Ground Brick, Clay and Sand. Superior Kaolin for Rolling Mills and Foundries. Stone Ware and other Fire Clay and Sand, from my own mines at New Jersey and Staten Island, by the cargo or otherwise.

Watson Fire Brick Manufactory,
ESTABLISHED 1836.
JOHN R. WATSON, Perth Amboy, New Jersey.
Manufacturer of
FIRE BRICK,
For Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c.
FIRE CLAYS, FIRE SAND, AND KAOLIN FOR SALE.

NEWTON & CO.,
Successors to
PALMER, NEWTON & CO.,
ALBANY, N. Y., Manufacturers of
FIRE BRICK
Stove Linings,
Range and Heater Linings
Cylinder Brick, &c., &c,

M. D. Valentine & Bro
Manufacturers of
FIRE BRICK And Furnace Blocks,
IN ALL ITS BRANCHES.
Woodbridge, - - - N. J.

National Fire Brick & Drain Pipe W'ks,
CHAS. ANNESS & SONS, Props.,
Manufacturers of FIRE BRICK all shapes and sizes.
Miners and Shippers of all kinds of FIRE CLAY.
Factory at SPA SPRINGS, on Perth Amboy and Woodbridge, R. R.
Post Office address, *Woodbridge, N. J.*

TROY STOVE LINING AND Fire-Brick Works.
BELL & BACON.
Stove Linings a Specialty. TROY, N. Y.
JAS. C. BELL, JR. J. BLUNT BACON.

Established 1845.
WOODBRIDGE, N. J.
Fire Brick Works.
WM. H. BERRY & CO.
Manufacturers of all forms and sizes of FIRE BRICK, for Blast Furnaces, Rolling Mills, Gas House and Oven Tiles, and Stove Linings, made to order. Also, Fire Clay, Kaolin, Sand and Fire Mortar.

COX & COX,
Counsellors at Law,
229 Broadway, NEW YORK.
Practice in cases relating to
PATENTS and TRADE MARKS.
Before the
Courts and Patent Office.

A. H. SPENCER,
Solicitor of Patents,
And Expert in Patent Cases.
28 State St., Room 19, Boston.

HOWSONS'
OFFICES FOR PROCURING
UNITED STATES AND FOREIGN
PATENTS,
Forrest Buildings
119 SOUTH FOURTH ST., PHILADELPHIA,
AND MARBLE BUILDINGS
605 Seventh St. (Opposite U. S. Patent Office, *Washington, D. C.*
H. HOWSON, Solicitor of Patents. | C. HOWSON, Attorney at Law.
Communications should be addressed to the PRINCIPAL OFFICES, PHILADELPHIA.

FRANCIS C. NYE,
Counsellor at Law,
13 Murray St., N. Y.
PATENT CASES
brought or defended in any district of the U. S.

SOLICITS W. E. SIMONDS, Att'y at (Patent) Law. PATENTS
In the U. S. and abroad, with special aim to strength and validity, and in shortest possible time. Pamphlet free. 345 Main St., Hartford, Conn.

CROOKE & CO.,
MANUFACTURERS OF
WROUGHT IRON BUTTS,
All our goods are manufactured from patent faced iron plates; they have a smooth face and bright finish.
163 & 165 Mulberry Street, New York.
FERNALD & SISE, Agents, 100 Chambers Street, N. Y.

Burke & Fraser,
SOLICITORS OF
PATENTS
37 PARK ROW, N. Y. CITY.
Established 1851. *Also Consulting Engineers.*

PATENTS. Thomas D. Stetson, No. 23 Murray St., N. Y. Solicitor of Patents, and Scientific Expert in patent cases.
Send for circular.

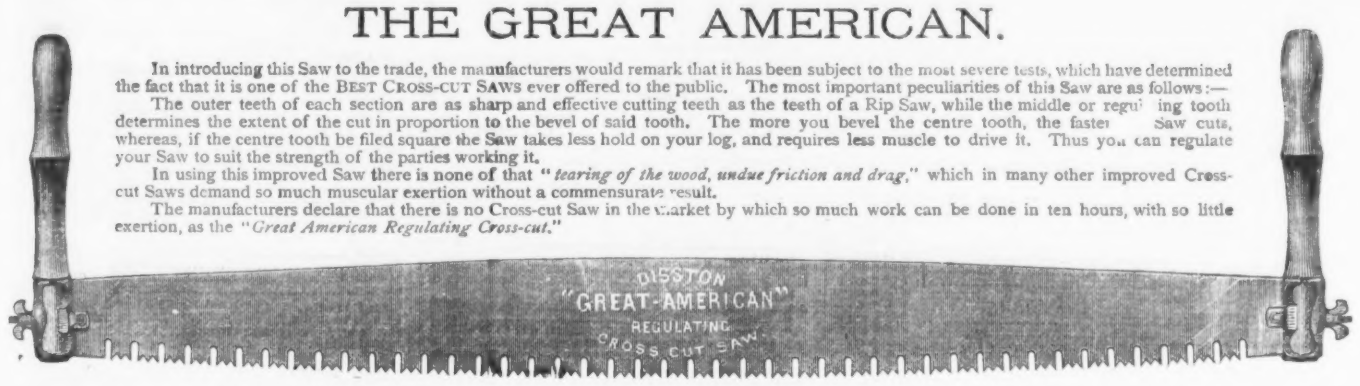
HENRY DISSTON & SONS,

Keystone Saw, Tool, Steel and File Works.

Front and Laurel Streets, Philadelphia.

Our Celebrated CROSS-CUT AND WOOD SAWS.

THE GREAT AMERICAN.

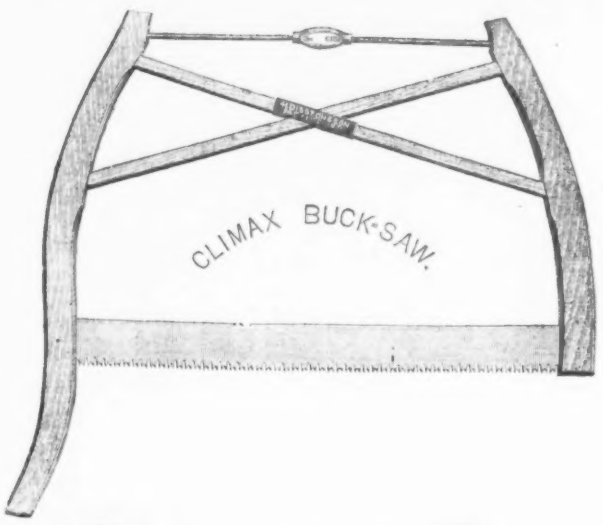


In introducing this Saw to the trade, the manufacturers would remark that it has been subject to the most severe tests, which have determined the fact that it is one of the BEST CROSS-CUT SAWS ever offered to the public. The most important peculiarities of this Saw are as follows:—

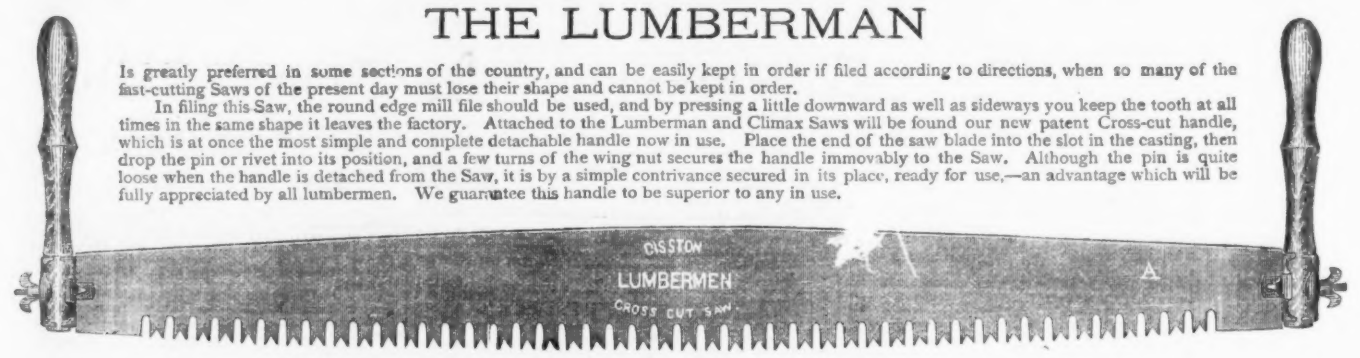
The outer teeth of each section are as sharp and effective cutting teeth as the teeth of a Rip Saw, while the middle or regu ing tooth determines the extent of the cut in proportion to the bevel of said tooth. The more you bevel the centre tooth, the faste Saw cuts, whereas, if the centre tooth be filed square the Saw takes less hold on your log, and requires less muscle to drive it. Thus you can regulate your Saw to suit the strength of the parties working it.

In using this improved Saw there is none of that "*tearing of the wood, undue friction and drag*," which in many other improved Cross-cut Saws demand so much muscular exertion without a commensurate result.

The manufacturers declare that there is no Cross-cut Saw in the market by which so much work can be done in ten hours, with so little exertion, as the "*Great American Regulating Cross-cut.*"

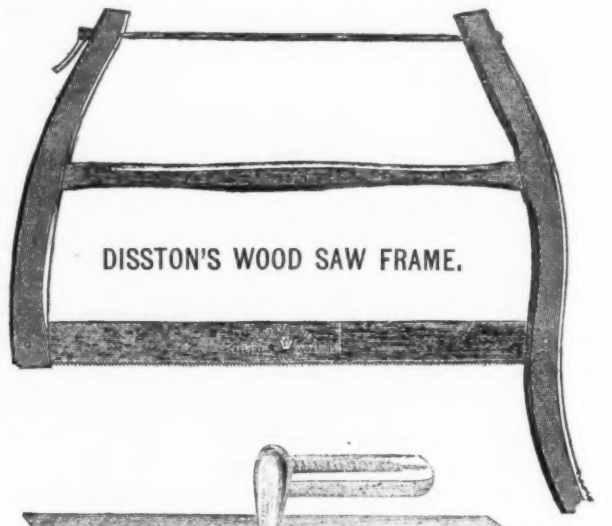


THE LUMBERMAN

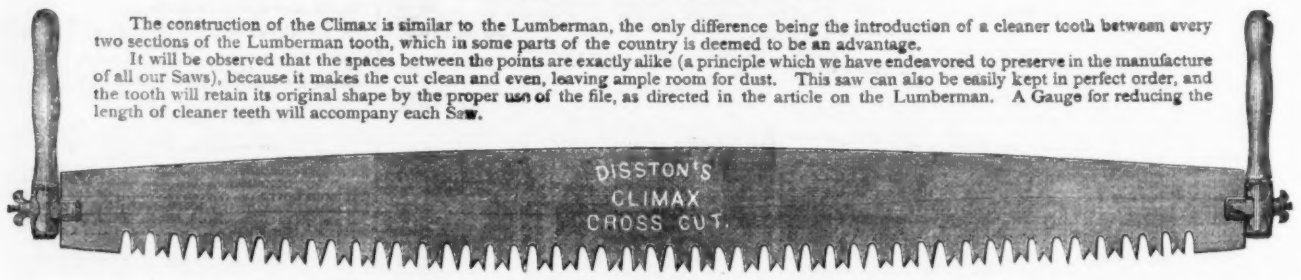


Is greatly preferred in some sections of the country, and can be easily kept in order if filed according to directions, when so many of the fast-cutting Saws of the present day must lose their shape and cannot be kept in order.

In filing this Saw, the round edge mill file should be used, and by pressing a little downward as well as sideways you keep the tooth at all times in the same shape it leaves the factory. Attached to the Lumberman and Climax Saws will be found our new patent Cross-cut handle, which is at once the most simple and complete detachable handle now in use. Place the end of the saw blade into the slot in the casting, then drop the pin or rivet into its position, and a few turns of the wing nut secures the handle immovably to the Saw. Although the pin is quite loose when the handle is detached from the Saw, it is by a simple contrivance secured in its place, ready for use,—an advantage which will be fully appreciated by all lumbermen. We guarantee this handle to be superior to any in use.

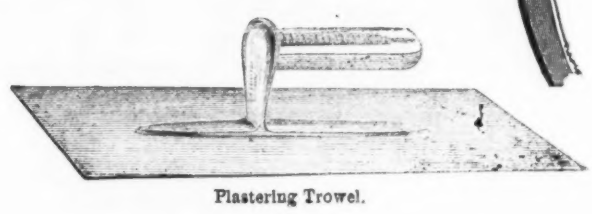


THE CLIMAX.

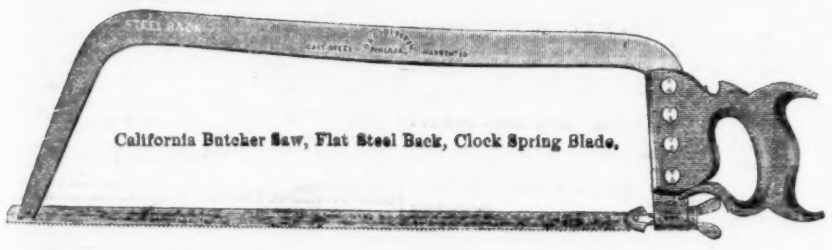


The construction of the Climax is similar to the Lumberman, the only difference being the introduction of a cleaner tooth between every two sections of the Lumberman tooth, which in some parts of the country is deemed to be an advantage.

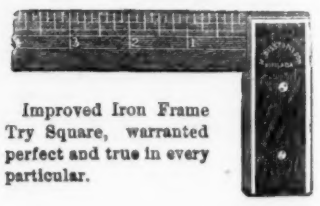
It will be observed that the spaces between the points are exactly alike (a principle which we have endeavored to preserve in the manufacture of all our Saws), because it makes the cut clean and even, leaving ample room for dust. This saw can also be easily kept in perfect order, and the tooth will retain its original shape by the proper use of the file, as directed in the article on the Lumberman. A Gauge for reducing the length of cleaner teeth will accompany each Saw.



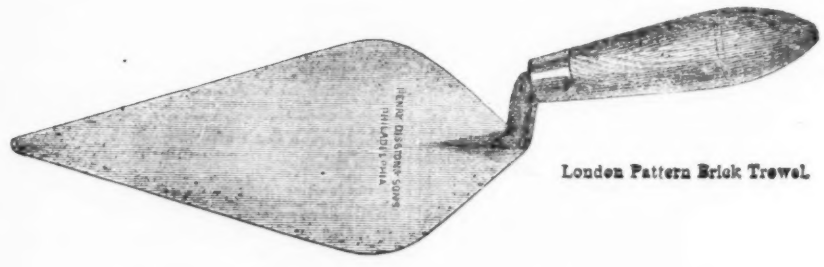
Plastering Trowel.



California Butcher Saw, Flat Steel Back, Clock Spring Blade.



Improved Iron Frame Try Square, warranted perfect and true in every particular.

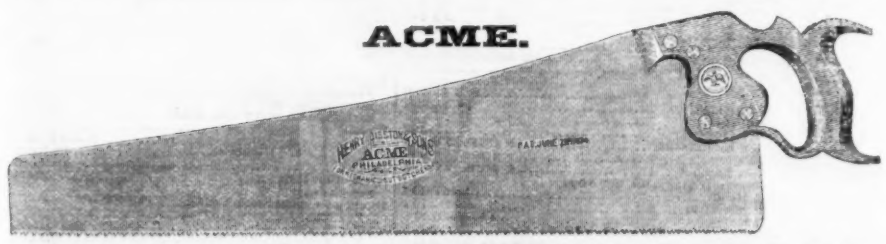


London Pattern Brick Trowel.

HENRY DISSTON & SONS'

New Patent Skew-back Hand-Saw,

ACME.

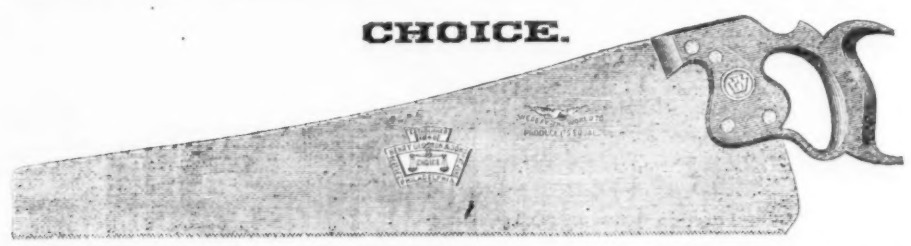


We consider these Saws to be the ACME of perfection. So say all first-class Mechanics who have used them.

HENRY DISSTON & SONS'

New Patent Skew-back Hand-Saw,

CHOICE.

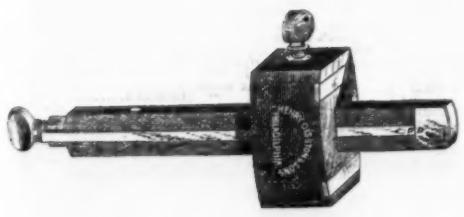


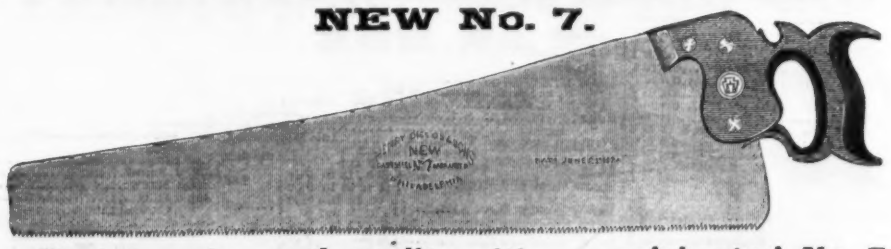
This Saw is the "CHOICE" of all first-class Mechanics who have used it.

HENRY DISSTON & SONS'

Patent Skew-back Hand-Saw

NEW No. 7.





Even in price and quality with our celebrated No. 7 Saw. Warranted to give satisfaction every time.

Slaw Cutter.

New York Wholesale Prices, October 13, 1875.

HARDWARE.

Anvils.

Wright's......⅌ ℔ gold 11c; over 250 ℔s 11¼c, gold
Armitage's Mouse Hole......gold 11c
Wilkinson's......⅌ ℔ gold 11c
Eagle Anvils......⅌ ℔ 8c

Apple Parers.

Domestic, Turn Table, Lightning, Hudson's, Reading, Union } $7.75 ⅌ doz
Skeleton Paring, Coring and Slicing......$3 00 ⅌ doz net
Bay State, Paring, Coring and Slicing......$15 00 dis 10 %
Climax Slicer......8 00

Augers and Bits.

Conn. Valley Mfg. Co., Douglass, Ives, Beecher (French, Swift & Co), Griswold, Challenge } 1st quality......dis 40&10 %
Nobles Mfg. Co......dis 40 @ 40&5 %
Cook's......dis 40&10&10 %
Diamond Hardware Co......dis 25&10&10 %
Snell Mfg. Co......dis 25 %
Jennings' Bits......dis 10 %
Lewis' Single Twist Bits......dis 30 %
Andrews' Bits......dis 25 %
Griswold's Patent Bits......dis 30 %
Expansive Bits, Clark'....small, $18; large, $26—dis 15 %
" " Ives'......$30 @ $30—dis 30 %
" " Blake's......$30—dis 40 %
Hollow Augers, Douglass', Ives', French, Swift & Co. } dis 40 %
" " Bonney's Adjustable. ⅌ doz $48—dis 25 %
" " Stearns' " ⅌ doz $48—dis 25 %
" " Ives' Expansive......each $4·50—dis 40 %
" " Universal Expansive. each $4·50—dis 10 %
Gimlet Bits—Screw, $7·50; no screw, $9......dis 20&10 %
Double Cut Gimlet Bits, Shepardson's......dis 20 %
" " Ct. Valley Mfg. Co..dis 30&10 %
" " Hartwell's......dis 50 %
" " Douglass'......dis 25&10 %
" " Ives'......dis 30 %
Morse's Bit Stock Drills......dis 20 %
L'Hommedieu's Ship Augers......dis 20 %
Watrous Ship Augers......dis 20 %
Vaughan's Post Hole—
6 in. $23 60; 7, 8 and 9 in. $25 per doz......dis 20 %

Awls, Brad Sets, &c.

Awls, Sewing, Common......per gross $1·20—dis 15 %
" " Best......per gross $1·60—net
" Shouldered Peg......per gross 2·25—dis 15 %
" Patent Peg......per gross ·60—dis 15 %
" Shouldered Brad......per gross 2·25—dis 15 %
Brad Sets, Aiken's......per doz $14·40—dis 25&10 %
" No. 42, $10·50; No. 43, $12·50......dis 40&10 %
" Clark's......dis 40&10 %
" Stanley's Excelsior......$18 50—dis 25&10 %

Axes.

Brook's......per doz $12 00 @ 14 00 net
Blood's......per doz $15 00 @ 16 50—dis 20 %
Hunt's......⅌ doz $12 50 @ 14 00
Collins'......⅌ doz 11 00 @ 15 50 net @ dis 5 %
H. Clark's (J. C. W. & Co.) bron'd or red. ⅌ doz $10 00 net
Hurd's......⅌ doz 10 50 @ 12 50
Simmons'......⅌ doz 11 00 @ 11 50
Morris'......⅌ doz 12 50 @ 13 50
Red Jacket......⅌ doz 12 00 @ 12 50
Mann's......⅌ doz 11 50 @ 13 00
" Double Bitted......⅌ doz 21 50 @ 22 00
Underhill's......⅌ doz 12 00 @ 13 00
" Crown......⅌ doz 12 50 @ 13 50
John Leverett's......⅌ doz 12 50 @ 15 50
Ten Eyck......⅌ doz $10 00 @ 12 50 net
M. H. Jones & Co......⅌ doz 10 50 @ 11 50 net
Nobles Mfg. Co......per doz $10 50, net
Elephant......per doz $10 50 @ 11 50 net

Axle Grease.—Frazer's......⅌ ℔ 6c.

Balances......dis 33 %

Bands.—Plated......new list dis 50&5 %
Iron Rim......new list dis 25&5 %
Brass (Plated list)......new list dis 50, 10&5 %
Oroide......new list dis 50&5 %

Bells.

Hand, Light Brass......dis 70&10 %
" Extra Heavy......dis 40&10 %
" White Metal......dis 50&10 %
" Silver Chime......dis 20&10 %
" Swiss......dis 25 %
" Globe (Cone's Patent)......dis 20&10 %
Gong Abbe's......dis 20&10 %
" Yankee......dis 35&10 %
" Barton's......dis 35 %
Crank, Taylor's......dis 25 %
" Brook's......dis 50 %
" Cone's......dis 10 %
" Connel's......dis 50&10 %
Lever, Sargent's......dis 60&10&10 %
" Taylor's......dis 25 %
" Hart, Bliven & Mead Mfg. Co......dis 50&10 %
" " " "......dis 50&10 %
Pull, Brook's......dis 50 %
" Western......dis 25 %
Call......dis 15 %
Cow—Common Wrought......dis 20&10 %
" Western......dis 20&10 %
" " Sargent's......dis 50&10&10 %
" Kentucky "Star"......dis 20&10 %
" " Sargent's......dis 50&10&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog.
$12·00 10·00 9·00 8·00 6·00 5·00 3·50 2·50 5·00—dis 45 %
" Yaw's Genuine......dis 35 %
" Texas......dis 40 %

Bellows.

Blacksmiths', Common, List of Sept. 15......dis 15 %
" Extra and Pittsburgh Pattern......List net
Moulders'......dis 30 %
Hand Bellows......dis 10 %

Blind Adjusters.—Domestic......⅌ doz $3—dis 20 %

Blind Fasteners.

Mackrell's......dis 30 %
Van Sand's, No. 2000, $14·00; No. 2705, $10·50 net @ dis 5 %
Washburn's Patent......⅌ gross $14 00 net
Merriman's......new list net

Blind Staples.

Boardman's Patent, ⅜ in. and larger......⅌ ℔ 3[illegible] c
" ¼ in......" 42 c

Blocks.

Tackle, Rope and Iron Strapped, Providence Tool Co.'s list......dis 30 %
Burr's......dis 10 %
Stanley Rule and Level Co......dis 25&10 %

Bolts.

Cast Iron Barrel, Shutter, &c......dis 60&10 %
Cast Iron Chain......dis 60&10&10 %
Wrought Iron Barrel......dis 50, 10&10 %
" " Square......dis 50, 10&10 %
" " Shutter......dis 60&10 %
Wrought Iron Flush, Stanley's......dis 15&10 %
" " " Sargent's......dis 50&10&10 %
Carriage and Tire, Common......dis 75 %
" " Norway Iron......dis 50&10 %
" " R. B. & W......(old list) dis 60 %
" " " Philadelphia......dis 60 %
" " " Shelton's......(old list) dis 60&10 %
Union Nut Company, old list......dis 60&10 %
Stove......dis 25 %
" R. B. & W......dis 25 %
" Shelton's Shaved Head......dis 25 %

Borax......15c. ⅌ ℔

Boring Machines.

	Upright.	Angular.
Hovey's, no Augers	$3·15	$4·00 net
" with Augers	5·00	6·00 net
Douglass', no Augers	3·25	4·00 net
" with Augers	5·00	6·00 net
Parr's, no Augers	5·00	7·50 dis 30 %
" with Augers	7·50	10·00 dis 30 %
Kellogg's, no Augers	5·25	6·75 dis 15 %
Sweets', "	4·75	6·25 dis 15 %
Snell's	4·75	6·25 dis 20 %
Phillips', with Augers	....	10·00 dis 45 %

Mortising Machines, $20·00 each......dis 20 %

Bow Pins.

Union Nut Co......new list dis 50&10&5 %
Hotchkiss'......dis 50 @ 55 %
Humason, Beckley & Co.'s......dis 50&10&5 %
Sargent & Co.'s......dis 50&10&10 %

Braces.

Barber's Patent......dis 40&5 %
Q. S. Backus......dis 40&10 %
Wilson Mfg. Co......dis 10 %
Spofford's Patent......dis 50 %
Noble's Patent......dis 40&5 %
Ives Novelty......dis 40&7½&10 %
" Hamden......dis 15&10 %
Common Ball (American)......dis 25 %

Brackets.—Shelf......dis 60&10 @ 65&10 %

Bright Wire Goods......dis 65&10&10 %

Butt Rings.—Union Nut Co., new list. dis 50&10&5 %
Sargent's......dis 60&10 %
Hotchkiss'......2½ in., $2·25 net

Bung Hole Borers.

Common and Ring......dis 20&10 %
Ives' Tap Borers......dis 10&10 @ 25 %
Enterprise Mfg. Co......dis 30 %

Butchers' Cleavers.

Humason & Beckley Mfg. Co......dis 20&10 %
Bradley's......dis 25 %
Beatty's......dis 20 %

2	3	4	5	6	7	8	9
$19·00	$21·00	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co......dis 45&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$34·25	$38·75	$43·25	$48·50	$54·00

Butts.

Wrought Brass......dis 30 %
Cast Brass......dis 20 %

Common Cast, not Drilled.

Fast Joint, Narrow......New list July......dis 30&10 %
" " Broad "......dis 40&10 %
" " Jap'd "......dis 35&10 %
Loose Joint, Narrow and Broad "......dis 50&10 %
" " " Jap'd "......dis 45&10 %
Parliament Butts & Mayer's Hinges "......dis 40&10 %
Loose Pin "......dis 45&10 %
" Japanned "......dis 35&10 %
Loose Pin, Jap'd, Plated Tips "......dis 50&10 %

Drilled and Wired.

Fast Joint, Narrow......New list July 1, dis 25&10 %
" Broad "......dis 35&10 %
" " Japanned "......dis 30&10 %
Loose Joint "......dis 45&10 %
" Japanned "......dis 45&10 %
Parliament and Mayer's Hinges "......dis 35&10 %
Loose Pin "......dis 40&10 %
" Japanned "......dis 50&10 %
" " Plated Tips "......dis 45&10 %

Union Mfg. Co.'s Fancy Butts.—
Figured Enameled Loose Joint......dis 55&10 %
Nickel Plated "......dis 33⅓&10 %
Boston Finish, Plain......dis 80&5 %
" " with Iron Acorns......dis 75&5 %
" " with Sil'd "......dis 65&5 %

Wrought Iron.

Fast Joint, Narrow, Lt. and Regular......dis 30 %
" Broad......dis 35 %
Loose Joint, Narrow and Broad......dis 35 %
Table Butts, Back Flaps, &c......dis 30 %
Inside Blind, Regular......dis 30 %
" " Light......dis 40 %
Loose Pin, Wrt......dis 35 %
Am. Spiral Spring Butt Co., list May 1st......dis 25 %
Union Spring......dis 20 %
Blind Butts, Parker......dis 65 %
" Palmer......dis 40 %
" Seymour......dis 55&10 %
" Shepard......dis 60 @ 60&10 %
" Lull & Porter......dis 60 %
" Nicholson......dis 45&10 %
" Huffer......dis 33⅓&10 %
" Garretson, No. 1......dis 65 %
" Clark's, Nos. 1, 3 and 5......dis 65 %
" Clark's No. 4......dis 65&10 %
" " Nos. 2, 4, 4½, 6, 8, 10......dis 45 %

Caps—Percussion, per 1000.

G. D......37 @ 40c
Ely's E. B......1-4s, 58c.; 1-10s, 70c. gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
Colt's......1-10s 80c gold

Carpet Sweepers.

Union......each $2 75 net
Welcome......each 2 75 net

Cartridges.—Metallic......dis 55&5 %

Cards.—Horse and Curry......dis 30&10 %
Cotton......dis 10&10 %
Wool......dis 15&10 %

Carpet Stretchers.

Cast Steel, Polished......per doz $5·00 dis 30 %
Cast Iron, Steel Points......per doz $2·00 dis 45&5 %

Casters.

Bed......dis 30&10 @ 40 %
Plate and Shallow Socket......dis 40&10 %
Deep Socket......dis 35 @ 40 %

Cattle Leaders......new list dis 60&10 %

Chain

English Coil......net gold

⅌ ℔	11¼	8¾	7⅛	7½	7¼	7c
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2......by the cask, ⅌ pair, gold 55c
Trace, 7-10-2......by the cask, ⅌ pair gold. 62c
German Halter Chain......dis 25 % gold
German Coil......dis 25 % gold
Galvanized Pump Chain......⅌ ℔ 13c
Jack Chain, Iron......dis 50&10 %
" Brass......dis 40&10 %

Chalk.

White......⅌ gross, 57c net
Red......⅌ gross, 90c net
Blue......⅌ gross, $1·00 net
White Crayons......⅌ gross, 16½c net

Chisels.

Socket Framing, Douglass, Extra......dis 60&10&10 %
" " Crossman......dis 50&15&10 %
" " Buck Bros. equivalent to dis 50&17½ %
" " Hart Mfg. Co......dis 60&10 %
" " Merrill......dis 60&10 %
" Firmers, Douglass, Extra......dis 60&10 %
" " Crossman......dis 50&10&10 %
" " Buck Bros......equivalent to dis 50&15 %
" " Hart Mfg. Co......dis 60&5 %
" " Merrill......dis 60 %
Socket Corner......dis 60&10 %
Tanged Firmers......dis 40&10 %
" " Butcher's......$5·50 to £ gold
" " Newbould's......$5·50 to £ gold
" " Spear & Jackson's......$5·50 to £ gold
" " Buck Bros (Shank)......$5·50 to £ gold

Clamps.

Cabinet......dis 60&10 %
Gray's......dis 20 %
Lambert's......dis 20 %
Providence Tool Co......dis 10 %

Clips, Axle.

Norway or Best......dis 40 %
Superior......dis 50 %
"Star," Superior Philadelphia......dis 45&5 %

Coal Shovels.

Wrought Iron. Nos.	1	2	
Long Wrt. H'dles..per gross,	$15·00	18·00	dis 25 %
Short "	12·00	14·00	dis 25 %
Wood Handles "	12·00	14·00	dis 25 %
Gem (Edgar's Pat.) "	15·00	18·00	dis 20 @ 25 %

Cast Iron, Iron Handle......per doz, 75 @ 80c. net
" Wood Handle......per doz, $1·00 net

Coal Hods.

Inch.	14	15	16	17	18	
Regular, Jap'd...per doz,	$12·00	12·75	13·50	15·50	18·00	dis 6&10 %
Regular, Gal'd.. "	15·00	16·00	17·50	19·50	22·50	dis 50&10 %
Ladies' Favorite, Jap'd. ⅌ doz	15·00	16·00	18·00	20·00		dis 50 %
Ladies' Favorite, Galvanized "	19·00	20·00	22·00	25·00		dis 45 %

Funnel Hods.— Nos.	15	16	17	
Oriental, Japanned ⅌ doz.	$16·50	18·00	20·00	dis 50 %
" Galvanized..	21·50	22·50	24·00	dis 40 %
Morning Glory, Jap'd. "	16·50	18·00	20·00	dis 50 %
" Gal'd. "	21·00	22·50	24·00	dis 40 %
Iron Clad, Jap'd "		21·50		dis 60&10 %
" Gal'd "		22·50		dis 50&10 %

Sidney Shepard & Co.'s new list......dis 10 %

Cockeyes....1¼ in., 28c.; 1⅜ in., 33c.; 1½ in., 37c. net

Cocks.

Brass Racking......dis 30&10 %
Lock and Globe......dis 30&10 %
Lever Bibbs......dis 30&10 %
Ale and Beer......dis 25&10 %

Coffee Mills.

Board and Box......dis 15 @ 20 %
Brighton......dis 20 %
Increase Wilson's......dis 20 %
Selsor's Pat......$9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.)......dis 20 %
French Steel......dis 15 %
The Swift......dis 20 %

Compasses and Dividers.

Bemis & Call Co.'s......dis 35&10 %
Cook's......dis 15 %
Excelsior......dis 30 %
Peck Stow & Wilcox......dis 25 %
Miller's Patent......dis 25&10 %

Coopers' Tools.

Bradley's......dis 15 @ 20 %
Chas. E. Little......dis 20 @ 25 %
Swan & Brombacher......dis 15 @ 20 %

Corkscrews......dis 25 %

Corn Knives and Cutters.

Bradley's......dis 10 %

Crow Bars.

Cast Steel......⅌ ℔ 11c. net
Iron, steel points......⅌ ℔ 5c

Crucibles.—Gautier & Co......⅌ No. 5½c

Curling Irons, &c.

⅜, ⅝, ¾ in., $1·80, $2·00, $2·40......dis 10 %
Curling Tongs......⅌ doz $6 50—dis 15 %
Pinching Irons......⅌ doz 7 50—dis 20 %

Curry Combs.

Hotchkiss' & Kellogg's, Iron & Brass, old list......dis 40 %
Fitch's (List of No. 240, $1)......dis 20&10 %
Rubber......⅌ doz, $9·00—dis 15 %
Wood Tooth (Fuller Bros.)......per doz $2·25 net

Curtain Pins.—Silvered Glass......new list dis 15 %

Cutlery.

American Table { Meriden } New list Jan. '75, dis 25 %
American Pocket { Cutlery Co }......dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co...dis 20&10 %
Am. Miller Bro.'s Cutlery Co......dis 25 %
Naugatuck Cutlery Co......dis 25 %

Dippers.

Britannia......per doz 7·50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain......per doz $3·25—dis 20 %
" Rimmed......per doz 3·75—dis 20 %

Dog Collars.

Embossed Gilt......dis 20 %
Leather......dis 30 %
Brass......dis 25 %

Door Springs.

Gem (V.W.&W.), No. 1 Large, Jap'd ⅌ doz $3·50 }
" " No. 2 Medium......⅌ doz 2·50 } dis 10 %
" " No. 3 Small......⅌ doz 2·00 }
Gray's (V.W.&W.)......⅌ doz 2·50 net
Torrey's Pattern (V.W.&W.)......⅌ doz $2·50 net
Torrey's Patent......⅌ doz $2·50 net
Johnson's......per doz $3 00 net
Philadelphia......5 in., $5·00; 8 in., $7·00 dis 15 %
Palmer's Japanned No. 6......⅌ doz $5·00 }
" Coppered " " 6·00 } dis 20 %
" Silvered " " 8·00 }
Challenge.—
Japanned......No. 9, per doz $ / No. 7, " / No. 6, " } See Trade Report.
Barker's Concealed......dis 12½ %

Drawing Knives.

Crossman's No. 1......dis 50&15&10 %
Douglass, Extra......dis 60&10&10 %
Hart Mfg. Co., No. 1......dis 60 %
Merrill......dis 60&10 %
Nobles Mfg. Co......dis 15 %
Bradley's......dis 25 %
Adjustable Handle......dis 15 %

Drills and Drill Stocks.

Blacksmiths'......each $2 60 net
" Self-Feeding......each $8 00 net
Breast, P. S. & W......dis 45 %
" Miller's Falls......dis 25 %
" Aiken's......dis 25&10 %
" Hotchkiss......dis 10 %
" Wilson's......dis 10 %
Ratchet, Merrill's......dis 20 %
" Ingersoll's......dis 35 %
" Whitney's......dis 20 %
" Weston's......dis 20 %
" Moore's Triple Action......dis 20 @ 25 %
Wilson's Drill Stocks......dis 10 %
Automatic Boring Tools......each $2·75—dis 20 %

Drill Chucks.—The Danbury..each 10·00, dis 20 @ 25 %
Beach Patent (Morse)......dis 15 %

Egg Beaters.

Monroe's......8 in. 10 in.
Per doz $8·00 9·00......dis 10 %
Dover......⅌ doz $6·00—dis 10 %
National......⅌ doz $4·50—dis 20 %
Peerless......⅌ doz $7·00—net

Emery.

Genuine Chester—Regular Nos......⅌ ℔ 6c } dis 10 %
" Flour and FF......⅌ ℔ 4c }

Washington Mills—Regular Nos......⅌ ℔ 8c
" Flour......⅌ ℔ 5c

Enameled and Tinned Ware.

Kettles......dis 30 @ 40 %
Sauce Pans......dis 25 %
Glue Kettles......dis 25 %
Tinned Saucepans......dis 25 %

Escutcheons.

Door Lock......Same discounts as Door Locks
Brass Thread......dis 60&10 %
Wood......dis 25 %

Faucets.

Fenn's......dis 50 %
" Cork Stops......dis 40 %
Star......dis 55&10 %
Frary's Patent Petroleum......dis 15&10 %
Taylor's Pattern "......dis 20&10 %
Wood and Metallic......dis 40 %
Wood, Cork Lined......dis 60&10 %
Enterprise Mfg. Co., Self-Measuring......dis 20 %

Felloe Plates.......⅌ ℔ 15c: dis 25 %

Files.

American File Co......$5 00 to £ currency—dis 20 %
Arcade File Works......$5·00 to £ currency
Auburn File Works......$5 00 to £ currency
Nicholson......new list, Jan. 1. 1875, net @ 5 %
Hartford File Co......$5 50 to £ currency—dis 10 %
L. B. Heller & Co......$5 00 to £ currency
Heller & Bros......$5 00 to £ currency
"Western"......5 00 to £ net
Wheeler, Clemson & Co......$5 00 to £ currency
Rothery's......$5 to £ currency
J. & Riley Carr......5 25 to £ gold
" " Horse Rasps......5 50 to £ gold
Stubs'......8 50 @ 9 00 to £ gold
Butcher's......5 25 to £ gold
Walter Spencer & Co.'s "Diamond"......5 00 to £ gold
Spear & Jackson's......5 00 to £ gold
Jowitt's......5 00 to £ gold
Newbould's......5 25 to £ gold
W. K. & C. Peace's "Imperial"......5 25 to £ gold
R. Ibbotson......5 00 to £ gold
Turton Bros. & Matthews......$5 50 to £ currency
Fisher's......4 75 to £ gold
Goodlad's......4 00 to £ gold
Moss & Gamble......5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold
" " Horse Rasps......5 25 to £ gold
"Philo Sheffield," P. T. Co......5 00 to £ gold
Limet & Co. (French)......5 00 to £ gold

Fluting Machines.

Mrs. Coles' Pony..4 in., $4·75; 5 in., $5; 6 in., 5·50; 7 in., $6
Knox, with 4-inch Rolls......3 80 each net
" " 6 "......4 30 each net
" " 8 "......6 75 each net
O. K......6 50 each net
Peerless, 4-inch Rolls......4 00 each net
" 5 " "......4 75 each net
Excelsior, No. 1......4 75 each net
" No. 2......6 50 each net
Diamond......7 50 each net
Champion, 6 inch rolls......6 00 each net
" 4 inch rolls......5 00 each net
Climax 7-inch Rolls......8 00 each net
" 4½ "......6 50 each net
Empire......4 00 each net
Eureka, No. 1, 7-inch Roll......8 00 each net
" No. 2, 5-inch Roll......6 00 each net
K. F. M., 4½-inch Roll......5 50 each dis 15 %
" 6-inch Roll......6 00 each dis 15 %
Myers' Fashion Fluter, 4½-inch Rolls......2 75 each net
" Convex Brass Fluter, Sad Iron attachment......per doz $15·00
Domestic Fluter......$1·50 each net
Geneva Hand Fluter......$15 00 per doz net

Fluting Scissors.......dis 25&10 %

Forges.

"Empire" (W. P. Kellogg & Co.)......dis 20 %

Forks.

Hay, Manure & Spading......dis 33⅓ %
Plated A 1......dis 50 %

Fry Pans.

Burnished, P. S. & W., new list......dis 50 %

⅌ doz	$3·00	3·75	4·25	4·75	5·25	6·00	7·00	8·00	9·00
No.	0	1	2	3	4	5	6	7	8

Smith, Burns & Co., "Excelsior" Polished......dis 35 %

⅌ doz	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00
No.	1	2	3		5	6	7	8

Gas Stoves.

Tiff & Howard......dis 20 %

Gauges.

Marking......dis 45&10 %
Wire......dis 10 %
" Smith's Patent......per doz $18·00, dis 40 %

Gimlets.

Nail and Spike......dis 25&10 %
Double Cut, Shepardson's......dis 20 %
" " Hartwell's......dis 40 %
" " Ives'......dis 25 %
" " Douglass'......dis 20&10 %

Grind Stone Fixtures

Sargent's Patent......dis 65&10 %
Reading Hardware Co......dis 65&10 %
J. F. Green & Bro......dis 20 %
Hart Mfg. Co.'s......dis 60&5&10 %
Rick Bros......dis 45&5 %

Hammers.

Emmet Hammer Co.'s Handled......dis 25 %
" " Sledge & Stone. ⅌ ℔ 40c.; dis 40 %
Humason & Beckley Mfg. Co......dis 16⅔&10 %
Maydole's......dis 12 %
Cheney's......net @ dis 5 %
Verree......dis 5 %
Yerks & Plumb......dis 20 %
Magnetic Tack......dis 25&10 %
Warner & Noble's......dis 10 %

Hand Cuffs and Leg Irons.

Tower's Hand Cuffs, $4 00 per pair } dis 25 %
" Leg Irons $5 50 per pair }
Providence Tool Co.'s Hand Cuffs $15 per doz } dis 10 %
" " Leg Irons 25 " }

Handles.

Door or Thumb Latches—

Nos.	0	1	2	3	4
Per doz	$0·80	1·00	1·18	1·35	1·50—dis 60 %

Roggin's Latches......40c. @ 50c. net
Bronzed Iron Drop Latches......per doz $1·30 net
Wrought Chest......dis 60&10 %
Surface Chest......dis 65&10&10 %
Flush Chest......dis 60&10&10 %
Lifting......dis 60&10 %
Coffin......dis 50&10 @ 60&10 %
Saw and Plane......dis 25&10 %
Hammer and Hatchet......dis 10 %
N. Carolina Handle Co......dis 15 %
Brad Awl......per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 20&10 %
" " " large " 6 50—dis 20&10 %
Apple " " ass'td " 6 00—dis 20&10 %
" " " large " 7 50—dis 20&10 %
Socket " " ass'td " 3 50—dis 20&10 %
" Framing " " " 7 00—dis 20&10 %
File......" " 4 00—dis 20&10 %
Auger......" " 6 50—dis 20&10 %
" large " 8 00—dis 20&10 %
Patent Auger, Ives'......dis 25&10 %
" " Douglass'......per set $1 25—dis 10 %
" " Swan's......per set $1 00—dis 20&10 %

Hangers.

Barn Door......dis 65&10 %
"Anti-Friction"......dis 40 %
Novelty......dis 30 %
Challenge......dis 40 %

Harness Snaps.

Henshaw's......dis 25&10 %
Judd's......dis 40 %
Fitch's (Bristol)......dis 30 %
Hotchkiss'......dis 10 %
Andrews'......dis 25 %
Sargent's......dis 50&10 %
New York Wire......dis 20&20 %

Hatchets.—Isaiah Blood......dis 15 %
Shingling, Nos. 1 2 3......⅌ doz $7 25 8 00 8 75
Claw, " 1 2 3......⅌ doz 7 75 8 50 9 25
Lathing, " 1 2 3......⅌ doz 7 50 8 00 8 50
Hunt's......dis 10 %
Shingling, Nos. 1 2 3......⅌ doz $7 25 8 00 8 75
Claw, " 1 2 3......⅌ doz 7 75 8 50 9 25
Lathing, " 1 2 3......⅌ doz 7 50 8 25 9 00
Hurd's......dis 25 %
Shingling, Nos. 1 2 3......⅌ doz $8 00 8 50 9 00
Claw, " 1 2 3......⅌ doz 9 00 9 50 10 00
Lathing, " 1 2 3......⅌ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s......dis 25 %
Shingling, Nos. 1 2 3......⅌ doz $6 50 7 00 7 50
Claw, " 1 2 3......⅌ doz 7 25 7 75 8 25
Lathing, " 1 2 3......⅌ doz 6 50 7 00 7 50
Yerkes & Plumb......dis 20 %
Shingling, Nos. 1 2 3......⅌ doz $7 00 7 50 8 00
Claw, " 1 2 3......⅌ doz 7 50 8 00 8 50
Lathing, " 1 2 3......⅌ doz 7 00 7 50 8 00
Simmon's......dis 15 %
Shingling, Nos. 0 1 2 3....⅌ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3....⅌ doz 9 00 9 50 10 00
Lathing, " 1 2 3....⅌ doz 8 00 8 50 9 00
Broad, " 1 2 3....⅌ doz 9 00 10 00 12 00
" " 4 5 6....⅌ doz 14 00 16 00 18 00
" " 7 8....⅌ doz 20 00 22 00
Elephant......dis 30 %
Shingling, Nos. 1 2 3......⅌ doz $8 00 8 50 9 00
Claw, " 1 2 3......⅌ doz 9 00 9 50 10 00
Lathing, " 1 2 3......⅌ doz 8 00 8 50 9 00
J. P. Verree & Co......dis 5 %
Shingling, Nos. 1 2 3......⅌ doz $7 00 7 50 8 00
Claw, " 1 2 3......⅌ doz 7 50 8 00 8 50
Lathing, " 1 2 3......⅌ doz 7 00 7 50 8 00
Underhill's......dis 10 %
Shingling, Nos. 1 2 3......⅌ doz 7 25 8 00 8 75
Claw " 1 2 3......⅌ doz 7 75 8 50 9 25
Lathing, " 1 2 3......⅌ doz 12 00 11 00 13 00
M. H. Jones & Co......dis 25 %
Shingling, Nos. 1 2 3......⅌ doz $8 00 8 50 9 00
Claw, " 1 2 3......⅌ doz 9 00 9 50 10 00
Lathing, " 1 2 3......⅌ doz 8 00 8 50 9 00

Hay Knives.—"Lightning"......per doz $20·00 net

Hinges.

Gate, Western......⅌ doz $6·25—dis 60&10 %
" N. E......⅌ doz 11·25—dis 6 &10&10 %
" N. Y. State......⅌ doz 7·20—dis 60&10 %
Rolled Plate......dis 65&10 %
" Raised......dis 65&10 %
Wrought Strap and T......dis 33⅓&10&5 %
Providence Plate. { 6 and 8 in. 11c ⅌ ℔ / over 8 in. 9½c ⅌ ℔ }......dis 30 %
Screw Hook and Strap......{ 8, 10, 12 in. 6¼c / 14 to 36 in. 5½c }......net
Heavy Welded Hook......{ 8 to 12 in., 6½c / 14 in. & up, 6c }......net
Screw Hook and Eye......{ ¾ to 1 in., 8¾c / ⅝ in. 9¾c / ½ in. 11½c }......net

Hoes.

Solid Shank, C. S......⅌ doz $8 00—dis 35 %
Socket......⅌ doz 9 00—dis 35 %

Riveted Eye......⅌ doz 5 00—dis 35 %
Grub......dis 25 %
Planters......net @ dis 5 %
Scovill......add 33⅓ %
Scovill Pattern......net @ dis 5 %
Lane's C. S. Cresent, American Pattern......list net
" " " Scovill Pattern......add 10 %

Hooks.

Bird Cage......dis 60&10 @ 70&10 %
Cotton......dis 50 %
Belt......dis 55 @ 60 %
Bench—Hotchkiss' $5 00 ⅌ doz......dis 10 %
" Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" McGill's......$3 00 per doz, dis 10 %
" Skinner's......per doz $6·25, dis 20 %
Clothes Line, Harness, Wardrobe, Hat and Coat, Ceiling. } Hart's list......dis 60&10&10 %
Sargent's list......dis 60&5&10 %
Reading list......dis 35&10 %
Wrought Staples and Hooks and Staples......dis 70&10 %
Wire Screw Hooks and Eyes......dis 65&10&10 %
Grass......dis 20 %
Whiffletree—Patent......dis 35 %
Hooks and Eyes—Malleable Iron......dis 60&10&10 %
" " Brass......dis 60&10&10 %

Horse Nails.

Nos.		5	6	7	8	9	10
American Pressed	⅌ ℔	22c	20c	20c	20c	20c	20c
Ausable	"	30c	27c	25c	24c	25c	22c
" P't'd & Pol'd..	"	31c	29c	30c	25c	24c	28c
" " & Blued..	"	32c	29c	27c	26c	25c	24c
Cortland	"	29c	26c	24c	23c	22c	21c
Buffalo Forged	"	31c	28c	26c	25c	24c	28c
Globe, P't'd & Pol'd...	"	31c	28c	26c	25c	24c	23c
National, Pointed and Polished, Pat. Fin...	"	28c	25c	23c	24c	21c	20c
National, Pointed and Polished, Ex. Fin....	"	30c	27c	25c	24c	23c	22c
Perkins' Pointed and Polished	"	30c	27c	25c	24c	23c	21c
Perkins' Pointed and Blued	"	31c	28c	26c	25c	24c	22c
Putnam	"	32c	28c	26c	25c	24c	23c
Vulcan, P't'd & Blued.	"	33c	30c	28c	27c	26c	25c

Star Brand, 16c.; Morgan......14c
Putnam......3000 lbs., dis 5 %
Ausable, Am. Pressed, Perkins, Globe, National and New London......1000 lbs., dis 5 %
Vulcan......1000 lbs., dis 7½ %
Vulcan and Brundage......500 lbs., dis 5 %

Horse Shoes.

Burden......⅌ keg, $5·12½
R. I. Horse Shoe Co., Perkins Pattern......⅌ keg, 5·12½
" " R. I. Pattern......⅌ keg, 5·87½
Mule Shoes......⅌ keg, 6·12½
Perkins' Snow......⅌ keg, 6·62½
Boston Rolling Mills Hand Made......⅌ ℔ 8c

Kettles.

Brass......⅌ ℔ 45c net
Enameled......dis 30 @ 40 %

Knives.

Ames' Butcher Knives......dis 20 %
" Shoe "......dis 15 %
" Bread "......⅌ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's"......dis 20 %
Table and Pocket......See Cutlery

Knobs.

Carriage (Jap'd 80 cents per gross)......dis 60&10 %
Base—Common......net
" Plush Tip......dis 10 %
" Elastic End, No. 8......dis 40&10 %
Door, Mineral......⅌ doz $2·25 }
" Por. Jap'd......⅌ doz 8·00 } dis 40&5 %
" " Plated......⅌ doz 7·00 } & 2 % for cash
" " Por......⅌ doz 7·30 }
Furniture, Plain......75c gross inch, dis 10 %

Ladles.

Melting, Hart's......dis 55&10 %
" Sargent's......dis 50&10 %
" Reading......dis 15&10 %

Lanterns.

Tubular......No. 0, $11·00; No. 1, $14·00 net
Peerless......No. 5, per doz $11·75—dis 10&10 %
Brady's Patent......dis 10 & 10 %
Ætna......dis 10 & 10 %
Yankee......dis 10 & 10 %
De Beque......dis 10 & 10 %

Lard Presses.

Draw Cut, 14 inch......each $65 00—dis 20 %

Lemon Squeezers.

Porcelain Lined......per doz $7 00, dis 15 %
Eureka, Tinned......per doz, $10·00 dis 10 %
Dunlap's Improved......per doz $6·00 net

Lines.

Linen Fish......dis 20 %
Cotton Chalk......dis 40 @ 45 %
Sil. Lake Chalk......Nos. 0, 1, 2, 3, $6, 6·50, 7, 7·50, dis 20 %
Mason's......dis 20 %

Locks and Latches.

Cabinet—Gaylord......dis 25 %
" Eagle......dis 25 %
Trunk......dis 25 %
Langstroth & Crane, Round Key......dis 40 %
" " Flat Key......dis 33⅓ %
Barnes & Deitz, Flat Key......dis 25 %
Yale Lock Co., Flat Key......dis 40 %
Sargent & Greenleaf, Flat Key......dis 20 %
Continental......dis 20 %
Shepardson's......dis 20 %
American Lock Co......dis 33⅓ %
Plate......new list dis 40&2 %
Trenton, Branford, Norwich, Russell & Erwin, Norwalk, Nashua, Mallory, Wheeler & Co., P. & F. Corbin, Parker & Whipple, Jacobus & Nimick Mfg. Co. }......dis 40&5 % ....and 2 % for cash
Padlocks, Russell & Erwin }
" Mallory, Wheeler & Co. }......dis 40&5 % ....and 2 % for cash
" Wm. Wilcox & Co. }
" Romer's......dis 5 %
" Vulcan Hardware Co......dis 20 %
" New York Lock Co......dis 20 %
" J. H. McWilliams......dis 5 %
" Scandinavian Jail......dis 10 @ 15 %
" Barnes & Deitz......dis 25 %
" D. K. Miller Lock Co......dis 30 %
" Penn Lock Works......dis 20 %

Mallets.—Hickory and Lignumvitæ......dis 20 %

Meat Cutters.

Dixon's (P. S. & W.). Nos. 1 2 3 4
⅌ doz. $14 00 $17 00 $19 00 $30 00 dis 25 %
Miles Challenge......Nos. 1 2 3
⅌ doz. $22·00 $30·00 $40 00—dis 30 %
Perry's (P. S. & W.)....Nos. 200 300 400
⅌ doz. $22·00 $27·00 $40·00—dis 25 %
Woodruff's (P. S. & W.)......Nos. 100 150
⅌ doz. $15·00 $18·00—dis 35 %
Hales'......Nos. 11 12 13
⅌ doz. $27·00 $33·00 $42·00—dis 35&2 %
Draw Cut......Nos. 5 6 7
Each $56·00 $90·00 $250 00—dis 20 %
American......dis 25 @ 25&5 %

No.	1	2	2½	3	4	B	5
Each	$6·00	$9·00	$12·00	$15·00	$30·00	$60·00	$75·00

Molasses Gates.

Stebbins'......dis 62½&10 %
" Tinned ends......dis 40&10 %
Bush's......dis 20 %
Lincoln's......dis 50&10 %
Weed's......dis 15 %

Mortars and Pestles.

Iron......net

Nail Pullers.

Taft's......per doz $24·00 net

Nails.......10d., $3·10 @ $3·15 net

Nuts and Washers.

Nuts......large, 6c; small, 8c off list.
Washers......large, 8½c: small, 10½c off list.

Oilers.

Miller's Zinc, Brass and Copper......dis 40 %
Sheet Metal Screw, Zinc, Brass and Copper......dis 40 %
Olmsted's......dis 25&10 %
Broughton's......dis 25&10 %
Malleable......per doz $5 00 dis 10 %
Prior's Patent or "Paragon"......dis 40 %

Ox Shoes.

Concave......⅌ ℔ 13c net

Ox Balls......dis 60&10 %

Pencils

Faber's Carpenters'......net
" Round Gilt......⅌ gross $6 00 net
Dixon's Lead......⅌ gross $4·50 net
" Lumber......⅌ gross 9·00 net

Picture Nails and Knobs.

Brass Head......dis 60&10 %
Porcelain Head......dis 55&10 %
Richards' Patent......dis 40 @ 40&10 %
Judd's......dis 60&10 %

Pinking Irons......per doz $2 75—dis 65 %

Planes and Plane Irons.

First Quality......dis 35 %
Second Quality......dis 50 %
Bailey's Patent Adjustable......dis 25&10 %
Plane Irons, Butcher's......$5 50 to £ gold—new list
" Buck Bros......$5 50 to £ gold
" Bailey's Patent......dis 25&10 %
" Auburn Tool Co.'s......dis 25 %
" Greenfield Tool Co......net list
" Middletown Tool Co......net list
" Ohio Tool Co......dis 10 %
" Spear & Jackson's......5 50 to £ gold—new list
" Sandusky Tool Co......dis 10 %
Plow Bits, Greenfield Tool Co......dis 10 %

Pliers and Nippers.

Button's Patent......dis 33⅓ %
Hull's Patent Nippers..No. 1, $15; No. 2, $21 ⅌ doz dis 25 %
Leach's Patent Wire Cutters......per doz $6 50—dis 15 %
Gas Pliers......dis 25 %

Plumbs and Levels

Stanley R. & L. Co.'s Pat. Adjustable......dis 65&10 %
" " " Non-Adjustable......dis 65&10 %
Chapin's......dis 66⅔&10 %
Standard Rule Co.'s New Adjustable......dis 60&10
Standard Rule Co.'s Non-Adjustable......dis 60&10&10 %
Pocket Levels......dis 50&10 %
Johnson's Patent Adjustable......dis 60&10 %

Pulleys.

Hot House and Tackle......dis 60&10 %
Jap'd Screw......dis 60&10 %
Brass Screw......dis 60&10 %
Jap'd Side......dis 60&10 %
" Clothes Line......dis 60&10 %
Hay Fork......per doz $4 50 @ 5 00, dis 10 %

Pumps.

Douglas Cistern, etc......new list dis 25 %
" S. & F......new list dis 20 %
Union Mfg. Co's. Cistern and Pitcher......dis 25 %
" " " Rams......dis 20 %

" " " Garden Engines......dis 10 %
Cucumber (Burlingham & Purdy)—
6 ft. No. 3, with 12 ft. pipe......$4·00 net
ft. No. 1, with 12 ft. pipe......4·50 net
From 6 to 36 ft. add 20 cents per ft.
Pipe, 8c. per ft.; Coupling, 20c. per ft.

Punches.

Belt or Drive......per doz $1·50 net
Spring......per doz $6·50—dis 20&10 %

Rail.

Sliding Door, Wrought Brass......⅌ ℔ 44c., dis 10 %
" " Iron, Painted......⅌ foot 9c—dis 55&10 %
Barn Door, ½, ⅝ and ¾ inch......dis 60&10&10 %
" " for N. E. Hangers......dis 60&10&10 %

Rakes.

Cast Steel......dis 35 %

$8 00	9 00	10 00	11 00
8	10	12	14 teeth.

Malleable......dis 35 %

$5 00	5 50	6 00	6 50
9	11	13	15 teeth.

Razor Straps.

Evan's......dis 25&10 %
Genuine Emerson (B. F. Badger or C. Emerson)......dis 25 %
Imitation Emerson......⅌ doz $2·75—dis 40 %
Hunt's......dis 40 %
Chapman......dis 10 @ 15 %
Torrey's......dis 10&10 %
Saunder's......net @ 10 %

Rivets.—Old Colony.

Iron and Tinned......dis 25&7½ %
In bulk......dis 7½ %
Copper Rivets and Burrs......dis 20 %

Nos.	7	8	9	10	11	12	13	14	15
Per lb.	49c	50c	52c	54c	56c	58c	60c	65c	70c

Rivet Sets......dis 5&10 %

Rods.

Stair......dis 40 %
" American Patent......dis 33⅓ %

Rollers.

Barn Door......revised list dis 60, 10&10 %
Novelty......dis 10 %

Rope. Manufacturers' List of Sept. 28, 1875.

Manila......½ inch and larger ⅌ ℔ 14½c
"......⅜ inch ⅌ ℔ 15 c
"......¼ and 5-16 inch ⅌ ℔ 15½c
Manila Lath Yarn and Tar'd Rope......⅌ ℔ 14 c
" Hay Rope......⅌ ℔ 15 c
Sisal......½ inch and larger ⅌ ℔ 11½c
"......⅜ inch ⅌ ℔ 12 c
Sisal......¼ and 5-16 inch ⅌ ℔ 12½c
" Hay Rope......⅌ ℔ 12 c

Rules.

	Boxwood.	Ivory.
Chapin's	dis 66⅔&10 %	dis 50&10 %
Stanley	dis 70 %	dis 55 %
Standard	dis 70 %	dis 50&10 %
Stephens'	dis 70&10 %	dis 55&10 %

Sad Irons.

From 4 to 10 lbs......⅌ ℔ 3¾ @ 4c net
Sad Iron, Nickel Stand attached......⅌ ℔ 9c
Self-Heating......per doz $10 00 net
" " Tailors'......per doz 22 50 net

Sand Paper.

Beader & Adamson's Flint, 00 to 1½...$4 25 ⅌ ream }
" " " 2, 2½ & 3. 4 75 " }
" " " Assorted. 4 25 " } dis 15 %
" " Star......⅌ ream $3 25 }
" " Emery......⅌ ream $6 50 @ 11 50 }
New England, same list as B. & A. Flint......dis 15 %
H. B. & M. Roman Flint " " "......dis 15 %

Sash Cord.

Common......⅌ ℔ 18 @ 20c. net
Patent......⅌ ℔ 24c. net
Silver Lake, Russia Flax......⅌ ℔ 55c }
" " White Cotton......⅌ ℔ 55c } net
" " Drab Cotton......⅌ ℔ 60c }
Raw Hide......dis 15 %

Sash Locks.

Clark's, Nos. 1 and 2, $10·00 per gross......dis 33⅓ %
Ferguson's......dis 33⅓ %
Norwich......dis 25 %
Walker's......dis 10 %
New England......dis 20 %

Sash Weights.—Solid Eyes......⅌ ℔ 2c

Sausage Stuffers or Fillers.

Miles......⅌ doz $20—dis 30 %
Stow or Perry......⅌ doz No. 1, $15; No. 0, $21—dis 25 %
Draw Cut No. 4......each $30 00—dis 20 %

Saw Frames......per gross $18 00—dis 15&10 %

Saw Rods......$10 list, dis 10&10 %

Saws.

Spear & Jackson's old pattern......$4 50 to £ gold
Spear & Jackson's American Pattern......$3·55 to £ gold
John Spear......$3 60 to £ gold
Am. Saw Co......new list
Perforated Cross Cuts, all kinds......68c ⅌ foot
Inserted Tooth......dis 10 %
All else......dis 12½ %
Disston's Circular......dis 20 %
" Mill......dis 25 %
" Cross Cut......dis 15 %
" other kinds......dis 12½ %
H. W. Peace's Circulars......dis 25 %
" Other kinds......dis 20 %
Wm. McNiece's Hand, Cross Cut and Circular......new list dis 15 %
Wm. McNeice's Patent Pole Pruning Saw......dis 10 %
" " Compass Saw......net.
E. M. Boynton's Lightning......dis 40 %
" Others......dis 15 %
Wheeler & Clemson Mfg. Co.'s Hand......dis 15 %
" " " Cross-Cut......dis 30 %
Livingston's Butcher and Kitchen......dis 15 %
" Framed Wood—

Nos.	101	102	103	105	106
Per doz	$12·00	10·00	12·00	8·00	7·00—net

Saw Sets.

Stillman's Genuine......⅌ doz $5·00—dis 10 %
" Imitation......⅌ doz 3·25—dis 20 %
Common Lever......per doz $2·00 dis 20 %
Leach's......No. 0, $8·00; No. 1, $15·00 dis 15 %
Nash's......No. 1, $8·50; No. 2, $5·50 dis 20&10 %
Hammer, Hotchkiss......$5·50 dis 10 %
" Bemis & Call's......dis 20 %
" Aiken's Genuine......$15·00 dis 25&10 %
" " Imitation......$7·00 dis 25&10 %

Scales.

Hatch, Counter......⅌ doz $36—dis 25 %
" Tea......⅌ doz $15—dis 25 @ 30 %
Union Platform......$6·00, $7·50—dis 40 %
Turnbull's......dis 20 %
Brown's......dis 25&5 %
Fairbanks'......new list dis 15 @ 20 %
Howe's......dis 15&5 %
Chatillon's Grocers'......dis 25 %
" Eureka......dis 20 %
Universal Family......dis 25 %
Scale Beams.
No. 1 300 to 1200 lbs......90c ⅌ cwt } dis 30&10 %
No. 2 " "......75c ⅌ cwt }

Scrapers.

Box, 1 Handle......per doz $5·00, dis 10 %
" 2 "......per doz 6·00, dis 10 %
Foot......dis 60 & 10 %
Ship (common)......per doz $3 00 net
Ship—Providence Tool Co......dis 10 %

Screw Drivers.

Hart, Bliven & Mead......dis 55&10 %
Douglass Mfg. Co......dis 25&10 %
" " No. 1......dis 20&10 %
Disston's......dis 40&10 %

Screws.

Flat Head Iron, List of September 1, 1875......dis 30 %
Round Head Iron " " "......dis 20 %
Flat Head Brass " " "......dis 30 %
Round Head Brass " " "......dis 20 %
Round Head Silver Capped, List March 1......dis 25 %
Hand Rail......dis 55&10 %
Coach or Lag......dis 30&10 @ 40 %
Coach, Patent Gimlet Point, List Jan. 1, 1875......dis 35 %
Bed......list net
Japanned, List of Sept. 1, 1875......Net
Machine—Flat Head, Iron, List Jan. 12, 1875......dis 25 %
" " Brass, " "......dis 15 %
" Round Head, Iron, " "......dis 20 %
" " Brass, " "......dis 10 %
English, Flat Head, Iron; American List, Sept. 1, 1875
Nettlefold & Chamberlain's......dis 30&5 %
Birmingham Sc'w Co......dis 30&5 %
Birmingham Screw Co., Brass......dis 30&10 %
Bench—Iron......dis 60, 10&10 %
" —Wood, Beach......⅌ doz $3·00 net
" " Hickory......dis 20&10 %
Hand......dis 25&10 %
Jack—Bell Bottom......dis 15 %

Scythes.

Blood's German Steel, Grass....⅌ doz $10 00 }
" Cast " "....⅌ doz 11 00 }
" Silver " "....⅌ doz 12 00 }
" German " Grain....⅌ doz 14 00 } dis $1·50 from list
" Cast " "....⅌ doz 15 00 }
" Excelsior and Granger. ⅌ doz 11 00 }
" Young America......10 50 }
" Silver Clipper......13 00 }
Scythe Snaths......dis 20 %

Sieves.—Mann's Patent......New list net

	14	16	18	20	24	30 mesh
Iron...	$3·00	3·00	3·25	3·50	3·75	4·75 ⅌ doz
Plated.	3·50	3·75	4·00	4·25	4·50	6·00 "

Wood Rims......18 mesh, $1·50 per doz, dis 10 %

Shears and Scissors.

Cast Steel......dis 75&10 %
Cast Iron......New list July 15......dis 30 %
Heinisch Sons' Trimmers and Scissors......dis 65 %
" " Standard quality Shears and Trimmers......dis 40 %
Seymour's Straight Trimmers......dis 60&10 %
" Scissors......dis 50 %
Pruning......per doz $19 00—dis 25 %
Barnard's Lamp Trimmers......per doz $3·75

Sheaves.

Sliding Door, M. W. & Co. list......dis 40&5&2 %
" R. & E. list......dis 50&5&2 %
" Patent Roller......dis 25 %
" " " Hatfield's......dis 50 %
" Russell's Anti-Friction......dis 50&2 %
Sliding Shutter, R. & E. List......dis 50&5&2 %

Shovels and Spades.

Ames......dis 20 %
Birmingham Shovel Co......dis 15 %
Rowland's......dis 25 %
Old Colony......new list dis 10&5 %
Middleboro' Shovel Co......new list dis 20 %
C. E. Jennings......New list dis 20&10 %
Dunning's Shovels and Scoops......dis 20&7½ %

Shovels and Tongs.

Iron and Brass Head, R. & E. list......dis 50&10&2 %
" " Hart's......dis 55&2&10 %
Polished Steel......dis 50&10&2 %

Skates.

Barney & Berry's N. Y. Club .... ₩ pair $2·75 } dis 25 %
B. & B. Club .... " 3·50
All Clamp .... " 4·25
Rink .... " 8·00
Florence Steel .... $1·00 dis 25 %
" Spring .... 3·00 dis 30 %
" All Clamp .... 3·50 dis 30 %
Peck & Snyder's—
No. 1, Blued .... per pair $5·00 } dis...25 %
No. 2, Nickel Plated .... per pair 6·00
No. 3, " extra .... per pair 8·00
Clipper Club Blued .... per pair 3·50
" " Full Pol'd .... per pair 4·50
" " " and Nickel Plated .... per pair 6·00
Acme Club Skates.—Nos. 5 7 10 12 14
Pair $4·00 5·00 7·00 7·50 8·00 dis 20 %

Slates.

Square Frames, Round Cornered, by case .... dis 65&10 %
Less than a case .... dis 65 %

Spoke Shaves.

Iron .... dis 33⅓&10 %
Wood .... dis 30 %
Bailey's .... dis 20&10 %

Spoons.

Tinned Iron .... dis 10 %
By the case .... dis 20 %
Basting .... dis 10 %
Britannia .... dis 50&5 @ 55 %
" Boardman's, new list .... dis 55 %
Rogers & Bro., A 1 .... dis 50 %
Derby Silver Co .... dis 50 & 5 %
Holmes, Booth & Haydens .... dis 50 %
Nickel Silver Co .... dis 40 %
German Silver .... dis 30 @ 33⅓ %
Tin (P. S. & W.)—
Teas .... $1·50 ₩ gross, net
Tables .... 2·75 " net

Stocks and Dies .... dis 5&10 %

Stone.

Hindostan Stone .... ₩ ℔ 6c } dis 20&10 %
" Axe Stone .... ₩ ℔ 8c
" Slips .... ₩ ℔ 10c
Sand Stone .... ₩ ℔ 6c—dis 20&10 %
Washita Stone .... No. 1, ₩ ℔ 30c net
" .... No. 2, ₩ ℔ 25c net
" Slips .... No. 1, ₩ ℔ 60c net
Arkansas Stone .... No. 1, ₩ ℔ $1·35 net
" Slips .... No. 1, ₩ ℔ $2·50 net
Grindstones, Family, J. F. Green & Bro .... dis 20 %

Stove Polish.

Joseph Dixon's .... ₩ gross, 6 00
Gem .... ₩ gross $4·25 @ 4·50 net
Gold Medal .... ₩ gross $6 00 dis 25 %

Squares.

Steel .... dis 50 %; full cases, dis 50&10 %
Iron .... dis 50 %; full cases, dis 50&10 %
Nickel Plated .... add $2 50 @ $4 00 ₩ doz net
Try Squares and T Bevels .... dis 45&10 %
Star Try Squares and Bevels .... dis 30 %
Disston's Try Squares No. 1 .... dis 20 %
" " No. 2 .... dis 40 %
" " Improved .... dis 20 %

Tacks.

Full Weight American Iron .... dis 45&7½ %
Half Weight American Iron .... dis 72½&7½ %
Carpet .... dis 7½ %
Brads American Half Weight .... dis 50&7½ %
Finishing Nails .... ½ ⅝ ¾ 1 1¼ in. and over
₩ ℔ .... 25c 20c 18c 14c 12c dis 7½ %
Trunk and Clout .... ½ ⅝ ¾ 1 1¼ in. and over
₩ ℔ .... 25c 20c 18c 14c 12c dis 7½ %
Copper Tacks .... ₩ ℔ 50c—dis 7½ %
Iron Shoe Nails, ₩ ℔ 4-8 and longer, 9½c; 3½-8, 10c .... dis 7½ %
Double Pointed .... dis 33⅓&10 %

Tapes, Measuring.

American Flask and Cap Co .... dis 20 %
Eddy's .... dis 20 %

Tea Trays.

American Tea Tray Co .... dis 15 %

Thermometers.

Tin Case .... dis 50&10 %

Toe Calks.

Winsted .... ₩ ℔ 13c., dis 10&10 %

Tobacco Cutters.

Enterprise Mfg. Co. (Champion) .... dis 20 %
Wood Bottom .... per doz $12—dis 25&10 %
All Iron .... per doz $19·50—dis 25&10 %

Tinners' Tools and Machines.

P. S. & W .... list net

Traps.

Game, Newhouse .... dis 25 %
" Peck, Stow & Wilcox .... dis 30 %
" Hotchkiss .... old list dis 30 %; new list dis 10 %
" Blake's Patent .... dis 30 %
Mouse, Wood Choker .... ₩ doz holes, 15 @ 16c
" Patent Chocker (Union Nut Co.) .... ₩ doz holes 16 @ 18c net
" Round, Wire .... ₩ doz $1 50 to 2 00 net
" Square, " .... ₩ doz 2 00 to 2 50 net
Cage, " .... ₩ doz 2 50, dis 10 %

Trowels.

Lothrop's Brick and Plastering .... dis 10 %
Disston's Brick and Plastering .... dis 12½ %
Rose's Brick .... dis 5 %
Brades' Brick .... gold, dis 10 %
Worrall's Brick and Plastering .... dis 20 %
Garden .... dis 25 %

Triers.

Butter and Cheese .... dis 25 %

Ventilators (Window).

Nickel and Gilt .... per dozen $16·00 @ 18·00

Vises.

Trenton Vises, Solid Box.
40 to 160 lbs 16c
160 and over 20c
Peter Wright's .... ₩ ℔ 15½c. gold
Wilson's Solid Box .... dis 15 @ 20 %
31 to 160 lbs 18c
160 and upward 22c
Wilson's Parallel .... dis 30 %
Sargent's " .... dis 50&10&10 %
Backus & Union, Parallel .... dis 25 %
Buffalo, Parallel .... new list dis 25 %
Fisher & Norris' Double Screw Parallel .... dis 15&10 %
Trenton Parallel .... dis 15 %
Merrill's Parallel .... dis 15 %
Parker's .... dis 20 %
Stephens' Parallel .... dis 15 @ 20 %
Bonney's Saw Filers .... per doz $20—dis 20 %
Stearn's Saw Filers .... per doz $20—dis 20 %

Wheel Barrows.

Canal (Pugsley & Chapman) .... new list dis 15 %
Coal, Garden and Stone (Pugsley & Chapman) .... dis 25 %

Well Wheels.

Revised list .... dis 60&10 %

Wire.

Brass and Copper .... dis 10 %
Bright and Annealed .... Nos. 0 @ 18 dis 40 @ 45 %
" " .... " 19 @ 26 dis 47½ @ 52½ %
" " .... " 27 @ 36 dis 52½ @ 57½ %
Coppered .... " 0 @ 18 dis 35 @ 40 %
Galvanized, Nos. 0 to 9 .... ₩ ℔ 8½ @ 9c net
Galvanized, Nos. 10 to 18 .... market list dis 10 @ 15 %
Tinned .... dis 25 @ 30 %
Cast Steel .... dis 15 @ 20 %
Tinned Broom Wire .... dis 30 @ 35 %
Galvanized Telegraph, Nos. 8 and 9 .... ₩ ℔ 9c @ 9½c
Galvanized Telegraph, Nos. 10 and 11 .... ₩ ℔ 10c @ 10½c
" " " 12 .... ₩ ℔ 10½c @ 11c
Annealed Fence, Nos. 8 and 9 .... dis 40 @ 45 %
" Grape, " 10 to 14 .... dis 40 @ 45 %
Fence Staples .... ₩ ℔ 8 @ 8½ %
Stubs' Steel Wire .... $7 00 to £ gold
Judd's Picture Wire .... dis 50
Clothes Line Wire .... per coil 60c. net

Wrenches.

American Adjustable .... dis 45 %
Baxter's Adjustable "S" .... dis 20 %
" Diagonal .... dis 20 %
Collins & Co.'s .... dis 45 %
Coes' Genuine .... dis 40&5 %
" Pattern (Wrought) .... dis 50&10 %
" " (Malleable) .... dis 65&10 %
Lindsay's Patent .... dis 25 %
Taft's Pattern .... dis 70&10 %
Davis' Patent Duplex .... new list dis 25 %
Bemis & Call's Patent Combination .... dis 20&5 %
" " Merrick's Pattern .... dis 25&2½ %
" " Brigg's Patent .... dis 15&10 %
Aiken's Pocket (Bright) .... per doz $10·00—dis 50&10 %

Wringers.

		Less than 2 doz	2 doz lots
Providence	₩ doz	$72·00	$70·00
Reliance	₩ doz	69·00	67·00
Universal—Extra	₩ doz	72·00	70·00
Novelty	₩ doz	72·00	70·00
Sherman	₩ doz	72·00	70·00
Wringers without Cog Wheel	₩ doz	60·00	58·00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 10 %.

COMMON STAMPED WARE, &C.

Bucket Covers.

Quarts	½	1	2	3	4
Inch	4¼	5 3-16	6 5-16	6¾	7 11-16
Per gross	$2·00	2·60	3·40	4·25	5·75
Quarts		6	8	10	12
Inch		8½	9¼	9¾	10 9-16
Per gross		$6·50	8·00	8·50	11·50

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11½	12½	13½
Per gross	$15·00	18·00	22·00

Pot Covers.

Inch	7¾	8¼	8¾	9¼	9¾	10¼
Per gross	$5·75	6·00	6·25	6·75	7·25	8·25
Inch	10¾	11¼	11¾	12¼	12¾	13¼
Per gross	$8·75	9·50	10·00	13·00	13·75	16·50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4·00	4·50	5·50	5·80	8·50	10·50

Deep Pie Plates.

Inch	9	10
Per gross	$8·30	10·50

Jelly Cake Pans.

Inch	9	10
Per gross	$7·50	10·00

Coffee Pot Covers.

Plain	1½	2	3	4	5	6 qts.
Inch	3	3½	3¾	4¼	5	
Per gross	$1·15	1·40	1·60	2·00	2·75	3·00
Rimmed	2¾	3	3½	4	4½ inches.	
Per gross	$2·25	2·50	3·00	3·50	4·00	

T. K. Breasts only.

Inch	7¾	8	8½	9	9½	10	10½		1½
Per gro.	$6·00	6·50	6·75	7·25	7·75	9·50	10·00	12·00	13·00

Grater Plates.

Sheet	¼	½	1
Per gross	$3·00	6·00	11·50

Scolloped Cake Pans.

		Small.	Large.
Without Tubes	per gross,	$8·00	11·50
With Tubes	"	10·50	14·00

Stamped Square Pans.

No .... ½
Per gross .... $7·50 14·50

Common Square Pans (One Sheet).

Per gross .... $11·50

Milk Skimmers (Plain or Pierced).

Per gross .... $4·00

Lettered Plates

Inch 5½ 6
Per gross .... $3·25 4·00

Steamer Bottoms.

Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain per gro.	$4·00	4·50	5·00	5·50	6·00	7·00
Jap'd or Burn'd. "	6·00	6·50	7·00	8·00	8·50	10·00

Coffee Boiler Lips.

	Small.	Large.
To Rivet .... per gross,	$0·80	1·10
To Solder .... "	1·25	

STAMPED DEEP AND RETINNNED WARE,

Discount 20&10 %.

Plain Stamped Water Dippers.

	½ pint.	Pint.	Quart.	quarts.	2½ quarts.
Per doz	·90	1·15	1·50	1·85	2·50

Retinned Milk Pans.

Qts.	½	1	1½	2	3	4	5	6	8	10	12
₩ doz,	1·20	1·50	1·75	2·00	2·25	3·15	3·50	3·85	4·75	5·25	5·75

Dipper Bowls, Plain Stamped—
Pints .... ½ 1 Quarts 1 2 2½
Per doz. ·50 ·75 Per doz .... 1·00 1·25 1·75
Dipper Bowls Retinned—
Pints .... ½ ¾ 1 Quarts 1 2 2½
Per doz. ·75 ·95 1·05 Per doz .... 1·40 1·75 2·25

Pans.

Dish Pans, Retinned Deep—

Quarts	7	8	10	14	17	21	30
Per doz.	8·50	9·50	11·00	13·00	16·00	19·00	30·00

JAPANNED TIN WARE, dis 5 %.

Cannisters, Common .... Pound ½ 1 2 3
Per gross $10·50 15·00 24·00 30·00
Canisters, Hinged .... Pound 1 1½ 2 3 4
Per gross $19·00 25·00 32·00 37·00 42·00
Canisters, Square .... Pound 2 4 6 8 12 16
Per doz $3·00 4·25 5·00 5·75 8·00 9·60
Candlesticks, Japanned .... No. 1 2
Per gross $8·00 7·00
Cake Boxes, Round .... per nest, $3·25
Square .... per nest, 4·25
Chamber Pails, Japanned
Nos 2 3 4 5
Green, per doz .... $8·00 9·00 11·00 13·00
Oak " .... $9·00 11·00 12·00 13·50
Dust Pans, Corrugated .... per gross, $22·00
Box Graters .... per gross, $3·75
Molasses Cups .... Pint ½ 1 2 4
Per gross $13·00 16·00 28·00 42·00
Lunch Boxes, per doz .... 7 in. $2·00; 8 in. $2 50
Pepper Boxes Japanned .... ₩ gross small, $3·00; large, $4·00
Toy Banks, House .... No. 1 2
Per gross $7·00 5·50
Toy Banks, Gothic .... No. 1, $6·00, No. 2, 4·00 per gross
Toy Cups, Straight .... No. 1 2 3
Per gross $3·75 3·25 2·75
Toy Cups, Flaring .... No. 1, $4·25; 2, $3·75 ₩ gross
Toy Pails, Covered .... No. 1, per gross $4·00
Toy Rattles .... per gross, $2·00
Trunks, Wire Handled .... per nest (5) $1·75
Spittoons, Tin .... per gross, $27

PLANISHED TIN WARE, dis 20 %

Tea Pot Handles—P. S. & W .... dis 20 %
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small 4½ inches .... per gross, $11·50
No. 2, Medium, 5¾ " .... " 12·50
No. 3, Large, 6½ " .... " 13·50
No. 4, Ex. Large 7½ in., for Wash Pitchers &c .... " 18·00
Solid Iron, Tin Tipped.
No. 10, Small, 4½ inches .... per gross, $9·00
No. 15, Medium, 5½ " .... " 9·50
No. 20, Large, 6½ " .... " 10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
No. 12, Bronzed and Tin-Tipped .... per gross, $18·50
Saucepan Handles, Of Best Malleable Iron.
P. S. & W .... dis 20 %
Japanned.
No. 1, 5½ inches long .... per gross, $3·50
No. 2, 6 " .... " 3·75
No. 3, 6½ " .... " 4·00
No. 4, 7½ " .... " 4·25
No. 5, 8 " .... " 4·50
No. 6, 9 " .... " 4·75
Tinned.
No. 1, 5½ inches long .... per gross, $4·25
No. 2, 6 " .... " 4·50
No. 3, 6½ " .... " 4·75
No. 4, 7½ " .... " 5·25
No. 5, 8 " .... " 5·50
No. 6, 9 " .... " 5·75
Japanned .... per lb., ·16
Tinned .... " ·20
Iron Kettle Ears (P., S. & W.) .... dis 45 %
Half gross pairs in a package.

Tinned

Nos	1	2	3	4	5	6	7	8
Per gross pairs	88c	$1·00	1·50	1·75	2·10	2·75	3·75	4·50

Black.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	75c	88c	$1·35	1·50	1·75	2·25	2·75	4·00

Tinned Tea Kettle Ears.

Nos	4	5	6
Per gross pairs	$1·75	2·10	2·75

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos	1	2	3	4	5	6	7
Per gross pairs	$1·00	1·25	1·50	1·75	2·00	2·50	3·00

Malleable Iron Kettle Ears for Coal Hods, &c.
P., S. & W .... dis 20 %
No. 10 Small .... ₩ ℔. Tinned 20c; Black, 16c
No. 20 Medium .... ₩ ℔, " 20c; " 16c
No. 30 Large .... ₩ ℔, " 20c; " 16c
No. 40 Extra Large .... ₩ ℔, " 20c; " 16c
In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4½ in..dis 25 %
Plain, 8c.; Japn'd, 9c.; Tinned, 15c. per lb.; Malleable Clips or Ears to match, Tinned .... 20c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.) .... dis 35 %
Plain with drilled holes, per lb 9c
Plain with Cast " " 8c
Plumbers' Scrapers—(P. S. & W) .... dis 25 %
Extra quality, length 6 in., per doz .... $4·00

METALS.

IRON.—DUTY Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.
Foundry No. 1 .... ₩ ton, $25 00 @ 25 50
Foundry No. 2 .... " 23 00 @
Gray Forge .... " 20 00 @ 22 00
SCOTCH.
Coltness .... " 38 00
Glengarnock .... "
Gartsherrie .... " 32 50 @ 38 00
Eglinton .... " 29 00 @ 30 00

Bar Iron.
Am. Refined, at mill .... 2·4c. @ 2·6c

Rails.
American, at works, currency .... " 45 00 @ 50 00
Old Rails .... 25 00 @ 26 00

Scrap.
Wrought Scrap .... " 30 00 @ 32 50

Bar Iron from Store.

Common Iron.
¾ to 2 in. round and square } ₩ ton $57 50
· to 6 in. x ⅜ to 1 in }
Refined Iron.
¾ to 2 in. round and square } " 57 50 @ 60 00
1 to 6 in. x ⅜ to 1 in }
1 to 6 in. x ¼ and 3-16 .... " 62 50 @ 65 00
Shafting Iron—2¼ to 4 in .... " 62 50 @ 75 50
Rods—3-16 to ⅝ round and square .... " 110 00 @ 65 00
Bands .... " 70 00 @ 72 50
Hoops—⅜ to 2 in .... " 130 00 @ 80 00
Swedish Iron.
Ordinary sizes .... " 130 00 @ 132 50
Plow size .... "

Sheet Iron.

		Common American and English.	R. G. American.	R. G. English.
os 10 to 20	₩ ℔	4c	5c	5½c
21 to 24	"	4¼c	5¼c	5½c
25 to 26	"	4½c	5½c	5¾c
27		4¾c	5¾c	6c
28	"	5c	6c	6½c

Galvanized, 14 to 20, prime, ₩ ℔ 8½c; 2d quality ₩ ℔ 7½c
" 21 to 24 " " 9½c " ... " 8½c
" 25 to 26 " " 10 c " ... " 9 c
" 27 " " 10½c " ... " 9½c
" 28 " " 11½c " ... " 10½c
Patent Polished .... ₩ ℔ 14c
Russia, Nos. 8 to 16 .... " 15½c
" Stained, No. 1 .... " 14½c
Belgian 10c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

¼	5	5½	6	7 inch.
$2·50	3·50	4·50	5·25	6·50 per doz.

RUSSIA IRON.

4½	5	5½	6	7 inch.
$5·00	7·00	9·50	12·00	14·00 per doz.

COPPER—DUTY. Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ ℔. Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem.
American Ingot .... ₩ ℔ 28¼ @ 28½c
English " ....

SHEATHING, BRAZIERS COPPER, BOLTS, &C.

Braziers Copper, ordinary sizes, over 16 oz., per square foot .... 31c. ₩ ℔
Braziers Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot .... 33c. "
Braziers' Copper, 12 oz. per square foot .... 35c. "
Circles less than 34 inch in diameter .... 34c ₩ ℔
Circles, 34 inch diameter and over .... 37c. "
Segment and Pattern Sheets .... 34c. "
Locomotive Fire Box Sheets .... 31c. ₩ ℔
Sheathing Copper, over 12 oz. per sq. ft .... 30c. "
" " 12 oz. ₩ sq. ft. and lighter .... 35c. "
Bolt Copper .... 31c. "
Copper Bottoms, 32c. ₩ ℔ .... net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

O'NEILL'S PATENT PLANISHED COPPER.

14x48.
14 and 16 oz. and heavier .... 37c. By the case, 36c. ₩ ℔
12 oz. and lighter .... 40c. " " 39c. "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier .... 39c. By the case, 38c ₩ ℔
(And all sizes not over 20 inches wide.)
30x60
14 and 16 oz. and heavier .... 41c. ₩ ℔
12 oz .... 44c. "

TINNING.

14x48, by the case .... 8c. ₩ sheet
14x48, less than case .... 10c. "
Other sizes not larger than 30x60 .... 2½c. ₩ sq.
Larger than 30x60 .... 5c. "

Brass.

ROLLED AND IN SHEETS.

For the purchase of 100 pounds and over at one time

HIGH BRASS.

All Nos. to No. 8, and widths 14 in. and under 30c
All Nos. to No. 8, inclusive, and widths over 14 to 0 in. inclusive 33c
Over 0 in. to 30 in. inclusive 36c
½c ₩ ℔ advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass at 49c
Sheets 4x48 in., and all sheets cut to particular sizes and lengths 36c
Printers' Rules 40c
Sheets wider than 30 in. and under 40 in 40c
" 40 in. and over 42c
Circular sheets in diam. from 4 in. to 14 inclusive 40c
" " " over 14 in. to 0 " 43c
" " " " 0 in. to 30 " 46c
" " " " 30 in. to 40 " 49c
" " " " 40 in 52c

LOW BRASS.

4c ₩ ℔ more than High Brass.
Gilding Metals, 7c ₩ ℔ more than High Brass.
Platers' or Gold Metal } In Bars 42c
} Sawed 45c
FOR SLITTING: Metal in Width.
in. to ½ in., to No. 30, inclusive, 1c ₩ ℔ advance.
in. to 1 in., thinner than No. 30, c ₩ ℔ advance.
in. to ½ in., " " 30, 3c " "
½ in. and less to No. 30, c ₩ ℔ advance.
½ in. and less thinner than No. 30 5c ₩ ℔ advance.

BRASS AND COPPER WIRE

(Stub's Wire Gauge).

	High Brass.	Low Brass.	Gild'g and Cop'r
Nos. 0 to 20	33	37	43
Nos. 21, 22, 23	34	38	44
Nos. 24 and 25	35	39	45

Brass Rods, No. 8 and larger, 39c ₩ ℔, less 10 per cent.
Wire straightened and cut, smaller than No. 8, special rates, not less than 6c ₩ ℔ advance.

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gild'g and Cop'r
No. 6	0·41	0·45	0·51
No. 7	0·44	0·48	0·54
No. 8	0·46	0·50	0·56
No. 9	0·48	0·52	0·58
No. 30	0·50	0·54	0·62
No. 31	0·52	0·56	0·66
No. 32	0·56	0·60	0·71
No. 33	0·60	0·64	0·81
No. 34	0·64	0·68	0·91
No. 35	0·69	0·73	1·08
No. 36	0·75	0·82	1·15
No. 37	0·98	0·98	1·28
No. 38	1·28	1·28	1·58

Ten cents per pound extra for Spooling.

MISCELLANEOUS.

Common Plain Brass Pail Ears .... 39c net
Hose Pipes, 500 and over .... 79c net
" under 500 .... 84c net
Door Rail .... 44c—dis 10 %

TUBING

(Brown & Sharpe's Gauge.)

Plain to No. 20, inclusive .... ₩ ℔ $0·48
Nos. 21, 22, 23, 2c. advance on List for each No.
Nos. 24, 25, 26, 4c. " " "
Above No. 26 special rates.
Plain Tube, 1-4 inch 64
" 3-16 " 1 49
" 1-8 " 1 74
All Mandrel-Drawn Tubes 5c. advance on List.
Fancy Tubing 4c. advance on List above Plain.
English, Scotch, and Extra Patterns Fancy Tubing to No. 20 57
Tubing sawed or cut 2 to 4 ft. long, 2c. advance on List.
Add to two cents a half-cent for each additional cutting under two feet.
Discount on the foregoing list, 10 per cent.

LEAD—DUTY: Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb.
Spanish .... 7c gold
German Refined .... 6½c gold
English .... 6¾ @ 7c gold
American .... 6 @ 6½c gold
Bar .... dis 10 % .... 8½c.
Pipe .... dis 10 % .... 9½c.
Tin Lined Pipe .... dis 10 % .... 16½c.
Sheet .... dis 10 % .... 9½c.
Shot .... dis 10 %. Drop, 9½c. Buck, 10½c.

BABBITT METAL.

N. P. U .... ₩ ℔ 8½ @ 9c
A., 25c.; B, 20c.; C, 15c.; D, 12c. ₩ ℔.

SOLDER .... No. 1, 15c.; No. 2, 14c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

Tool .... 15 @ 16c
Spring 10c
Homogeneous 12½c
Tire .... 12½ @ 13½c
Machinery (round and square) .... 10 @ 11c
File 11c
Sheet .... 14 @ 16c
Saw Plate, mill and mulay .... 14 @ 16½c
Saw Plate, gang and X cut .... 13 @ 14c
" circular as to size .... 18 @ 30c

Chrome Steel.

Tool .... ₩ ℔ 20 @ 21c
Tool, extra fine .... " 40 @ 75c
Spring .... ₩ ℔ 12c and upward
Machinery .... ₩ ℔ 14c
Hammer .... " 15c,
Gun or Homogeneous .... " 16c

English Steel.—payable in gold, net.
" Best Cast .... ₩ ℔ 17½c
" Extra Cast .... " 18½c
" Round Machinery, Cast .... ₩ ℔ 10½ @ 11½c
" Swaged, Cast .... " 19½c
" Best Double Shear .... " 17½c
" Blister, 1st quality .... " 14½c
" " 2d quality .... " 13 c
German Steel, Best .... " 11½c
do 2d quality .... " 10½c
3d quality .... " 9½c
Sheet Cast Steel, 1st quality .... " 15½c
" " 2d quality .... " 14½c
" " 3d quality .... " 12½c
File Steel, Flat and ½ Round .... " 12½c
" Square and Round .... " 12½c
" Mill 13½c
Taper to 4 inch .... " 16c
" Taper 3 and 3½ inch .... " 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.
Silesian, cash .... 6¾ @ 7c., gold
American " .... 7½ @ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 1·1c per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Blockand Pigs, free. Banca, subject to dutyof 10 per cent.
Banca .... ₩ ℔ 24c., gold
Straits .... ₩ ℔ 20 @ 20½c., gold
English .... ₩ ℔ 20 @ 20½c., gold

TIN PLATES, CURRENCY PRICES.

I C 10x14, Prime Charcoal .... 9 @ 9·50
12x12, " .... 9·50 @ 10·00
14x20, " .... 9·75 @ 10·25
I X 10x14, " .... 11·25 @ 11·75
12x12, " .... 11·75 @ 12·25
14x20, " .... 12·25 @ 12·75
D C 12½x17 " .... 8·50 @ 9·00
D X 12½x17 " .... 10·75 @ 11·25
For each additional X add .... 2·25

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$ 8·75 @ 9·00	8·25 @ 8·50	7·50 @ 8·25
I C 12x12	9·25 @ 9·50	8·50 @ 8·75	
I C 14x20	9·25 @ 9·50	8·50 @ 8·75	7·50 @ 8·00

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$ 8·25 @ 8·50	8·00 @ 8·25	7·50 @ 8·00
I X 14x20	10·75		
I C 20x28	17·75 @ 18·00	16·25 @ 17·00	16·25
I X 20x28	22.50		
I C 20x200			

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₩ ℔.
Sheet .... cask 10½c
" .... open 10½c

Old Metals.

(Dealers' Selling Price.)

Copper		@	20
Yellow metal	14	@	15
Brass	13	@	14
Heavy Composition	17	@	18
Old lead, solid	6	@	6½
Tea lead			5
Wrought iron	1½	@	
Sheet iron	0¾	@	0⅞
Cast iron			¾
Machinery iron	1½	@	1
Zinc	5	@	5½
Pewter, No. 1	17		
" No. 2	10	@	12
Spelter	5	@	

Paints, Oils, etc.

Paints.

Black lamp—Coach Painters .... ₩ ℔ 20c
" " Ordinary 6c
" Ivory Drop, fair 15c
" " best 26c
Black Paint, in oil .... kegs, 8c.; ass't'd cans, 11 c
Blue, Prussian, fair to best .... 50 @ 75c
" " " " in oil .... 35 @ 65c
" Chinese dry 88c
" Ultamarine .... 25 @ 80c
Brown, Spanish 1½c
" Van Dyke 9c
Carmine, 40 .... $12 00
Green, Chrome .... 15 @ 23c
" " in oil .... 18 @ 25c
" Paris .... good, 30c; best, 40c
" " in oil .... " 30c " 45c
Mineral Paints .... 1½ @ 4c
Orange Mineral 14c
Red Lead, American 9½c
" " English 10½c
" Venetian (N. C.) dry 2½c
" " in oil .... ass't'd cans, 11c; kegs, 8½c
" Indian, dry 10c
Rose Pink 18c
Sienna, American, Raw 4c
" Burnt 4½c
" " in oil .... 16 @ 26c
" Raw " .... 15 @ 22c
Umber, Burnt .... 4 @ 8c
" " in oil .... 16 @ 21c
" Raw .... 3½ @ 7½c
" " in oil .... 16 @ 22c
Vermillion, Chinese ....
" English .... 1 25, gold
" Trieste .... 1 10 "
" American, Common 23c
White Lead, American, pure dry 10c
" " in oil 11c
White, Paris, English, prime .... in bbls. 2¼ @ 2½c
Yellow Ochre, French .... 2¼ @ 2½c
" " " in oil .... ass't'd cans, 11c; kegs, 8½c
" " Vermont .... in casks 1½c
Yellow Chrome .... 17 @ 27c
" " in oil .... 18 @ 28c
Zinc White, American No. 1 dry 9c
" " 1, in oil 11c
" French (Paris) 11c
" " in oil 12c

Oils.

Linseed Raw .... ₩ gal. casks, 60c. bbl., 61c
" Boiled .... " 65c. " 66c
Whale, Crude .... "
" Bleached Winter .... " 75c
Sperm, Crude .... bbl. 1·65
" Winter unbleached .... " 1·90
" " Bleached .... " 2·00
Seal, Extra Refined .... "
Lard, Pure Winter .... " 1·30
" Spring .... " 1·20
Cotton Seed, Crude .... " 60c
" Southern Yellow .... " 65c
" White .... "
Neatsfoot, Winter .... 70c @ $1·10
Natural Lubricating .... 38c @ 40c

Sundries.

Asphaltum 5c
Benzine .... ₩ gal. 16c
Chalk 1½c
" Block ....
Dryer, Patent, Am'n .... ass't cans, 10½c.; kegs, 9c
" " English .... " 11c.; " 9c
Flocks ....
Frostings 50c
Glue, White .... 35 @ 47c
" Sheet 20c
Glaziers' Points, Zinc 9c
Gum, Copal 36c
" Damar 25c
Shellac, English 75c
" " " dark 65c
Litharge 10c
Pumice Stone, selected Lumps .... 4 @ 6c
" powdered 4c
Putty in bladders 3½c
" in bulk 3c
Rotton Stone, soft, English 8c
Spirits Turpentine 44c
Whiting, Spanish .... ¾c

Steel.

THREE 1st. CLASS PRIZE MEDALS. CLASSES 1, 21, 22, Great Exhibition of Industry LONDON, 1851.

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1 UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

COCKER BROTHERS,

(Limited.)

SUCCESSORS TO

SAML COCKER & SON,

(Established 1752.)

SHEFFIELD, ENGLAND

MANUFACTURERS OF

CAST, [illegible], SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.
BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;
Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
FISH HOOKS, NEEDLES, &c.

ALSO

GENERAL MERCHANTS.

WM. JESSOP & SONS,

MANUFACTURERS OF

STEEL,

AND IMPORTERS OF IRON

SHEFFIELD, ENGLAND.

PRINCIPAL DEPOTS:

NEW YORK, Nos. 91 and 93 John Street.....BOSTON, No. 141 Federal.
ST. LOUIS, No. 714 North Second Street.

AGENCIES

PHILADELPHIA, Jas. C. Hand & Co.....PROVIDENCE, Nightingale & Kilton.
CHICAGO, Crerar, Adams & Co.....NEW ORLEANS, Folger & Co.
CINCINNATI, Augustus Wessel.....SAN FRANCISCO, Huntington, Hopkins & Co.

F. W. MOSS,

Successor to **JOSHUA MOSS & GAMBLE BROS.**

FRANKLIN WORKS, WADSLEY BRIDGE WORKS, WALKLEY WORKS, } SHEFFIELD, ENGLAND.

MANUFACTURER AND IMPORTER OF

STEEL AND FILES.

Principal Depots: 80 John St., N. Y., and 512 Commerce St., Phila.

MOSS & GAMBLE **SUPERIOR C. S. "FULL WEIGHT" FILES,**

Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel. Also, manufacturer of

Sheet Cast Steel Shear, German, Round Machinery, Hammer, Fork and Shovel Steel

And GENERAL MERCHANT.

A. M. F. WATSON, General Agent.

WILSON HAWKSWORTH, ELLISON & CO.,

Vienna Universal Exhibition, 1873.

THE MEDAL FOR MERIT

Awarded for Excellence & Perfection in Material & Workmanship.

W. H., E. & CO. have pleasure in announcing the Award of the MEDAL FOR MERIT for their Exhibit of Crucible Cast Steel, Files, Steel Wire, Tools, &c. This is the ONLY Award to any Exhibitor of STEEL WIRE in the British Section.

Manufacturers of

STEEL,

Steel Wire, &c., AND GENERAL MERCHANTS.

CARLISLE WORKS, - - - SHEFFIELD, ENG.

New York, 72 John Street. *Philadelphia, 505 Commerce Street.* {Agencies:} *Boston, 21 Oliver Street.* *New Orleans, La. 111 Gravier St.*

Isaac Jenks & Sons,

MINERVA AND BEAVER WORKS, WOLVERHAMPTON, ENGLAND.

MANUFACTURERS OF

"JENKS" SPRING STEEL, "MINERVA" SWEDES, AND "ANGLO" CAST SPRING STEEL;
"JENKS" TIRE, TOE CORK, SLEIGH SHOE, BLISTER, AND PLOW STEEL;

ALSO,

"BEAVER" PLOW, TIRE, AXE, AND SHEET IRON.

VAN WART & McCOY, Agents, 134 & 136 Duane Street, N. Y.

J. & RILEY CARR,

MANUFACTURERS OF SUPERIOR

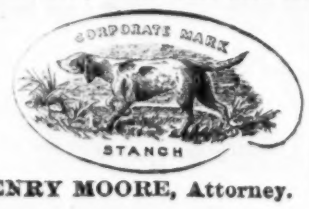
STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

ALSO THE CELEBRATED

DOG BRAND FILES,

Unsurpassed, if equaled in quality.



Bailey Lane Works, Sheffield, England.

Warehouse, 82 John St., New York.

Established 1810.

HENRY MOORE, Attorney.

Steel.

SANDERSON BROTHERS & COMPANY,

(LIMITED)

DARNALL WORKS, ATTERCLIFFE FORGE, } SHEFFIELD, ENGLAND.

Sole Manufacturers of the CELEBRATED

CAST STEEL,

Warranted most SUPERIOR and UNSURPASSED for

TOOLS and GRANITE ROCK DRILLS.

A full assortment of this universally approved OLD BRAND of English Steel, and

ARMITAGE'S GENUINE MOUSEHOLE ANVILS,

For Sale by

EDWARD FRITH, 16 Cliff Street, New York.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of **"CHOICE"** Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

JOHN HOGAN, Agent.

S. & C. WARDLOW,

MANUFACTURERS OF THE CELEBRATED

Cast and Double Shear

STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

SHEFFIELD, ENGLAND.

Office of S. & C. WARDLOW, 95 John Street, New York.

In calling the attention of consumers of Steel in any of the parishes above enumerated, we would respectfully assure them of our ability to supply an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. And a century of practical observance in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class material in quality, temper, and durability is needed.

G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for **Turning Tools, Taps, Dies, Drills, &c.**

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

☞ *Makers of the Celebrated ROCK BORING DRILL STEEL.*

Warehouse, 57 John Street, New York.

JOHN NICHOLSON & SONS

Established 1849.

STEEL MANUFACTURERS,

Mowbray Steel Works, SHEFFIELD.

NEW YORK OFFICE, - - - - - 88 Chambers Street.

MIDVALE STEEL WORKS.

Works and Office, NICETOWN, PHILADELPHIA, PA.

MANUFACTURERS OF

CRUCIBLE AND OPEN HEARTH STEEL,

Steel Locomotive Tires. Steel Axles of every description.

STEEL FORGINGS UP TO 8000 lbs. IN WEIGHT.

Solid Steel Castings, Hammer Dies, Frogs, Crossings, etc.

BEST TOOL, MACHINERY AND SPRING STEELS.

WM. SELLERS, Pres. CHAS. A. BRINLEY, Supt. MARRIOTT C. SMYTH, Sec. & Treas.

CHROME STEEL COMPANY,

MANUFACTURERS OF

CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Principal Office & Works, Kent Ave. and Keep St., Brooklyn, E. D., N. Y.

AGENCIES,

Kimbark Bros. & Co., Chicago, Ills.
Huntington, Hopkins & Co., San Francisco and Sacramento, Cal.
M. M. Buck & Co., St. Louis, Mo
Potter & Hoffman, Philadelphia, Pa.
Geo. Dunbar & Co., Boston, Mass.
Wood & Legrat, Hamilton, Ont.

Steel.

Sheffield Steel Works,

(Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa.,

Manufacturers of **Extra Quality Tool**

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of **Cast and German**

Spring and Plow Steel

Elliptic and Side Springs, Seat Springs.

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators, Reaper Bars, ow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.

Manufacturers of all descript of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.

PITTSBURGH, PA.

Gunpowder.

GUNPOWDER

DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS,

ESTABLISHED IN 1801,

Have maintained their great reputation for 75 years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle, & Diamod Grain Powder.

THE MOST POPULAR POWDER IN USE.

Also, SPORTING, MINING SHIPPING, AND BLASTING POWDER.

of all kinds and descriptions.

For sale in all parts of the country. Represented by

F. L. KNEELAND

70 Wall Street, NEW YORK.

GUN-POWDER

LAFLIN & RAND POWDER CO.

21 Park Row, New York,

invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES from having agencies and magazines at all prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands Rifle Powder

Orange Rifle, ***Orange Ducking***
Lightning, ***Audubon.***

SAFETY-FUSE at wholesale.

WOODEN TOOTH

Curry Comb.

The Best yet Invented.

CHEAP AND DURABLE.

Is Pleasant to the Horse, and does not injure the Brush.

FULLER BROS., Sole Agents,

89 Chambers & 71 Beade Streets, N. Y.

Steel.

HUSSEY, WELLS & CO.

MANUFACTURERS OF ALL DESCRIPTIONS OF

CAST STEEL,

INCLUDING

Best Refined Steel for Edge Tools.

PARTICULAR ATTENTION PAID TO THE MANUFACTURE OF STEEL FOR

Railroad Supplies, Homogeneous Plates

FOR LOCOMOTIVES, BOILERS AND FIRE BOXES,

Smoke-Stack Steel, Cast Steel Forgings for Crank Pins, Car Axles, &c.

ALSO, MANUFACTURERS OF THE CELEBRATED BRAND

"Hussey, Wells & Co. Cast Spring Steel,"

For Elliptic Springs for Railroad Cars & Locomotives.

PENN AND SEVENTEENTH STS., PITTSBURGH, PA.

BRANCH OFFICES:

30 Gold St., New York. 13 & 15 Custom House St., Boston. 146 E. Lake St., Chicago.

Pittsburgh Steel Works.

ESTABLISHED IN 1845.

ANDERSON & WOODS.

MANUFACTURERS OF

BEST REFINED CAST STEEL,

Cast and German Plow and Spring Steel,

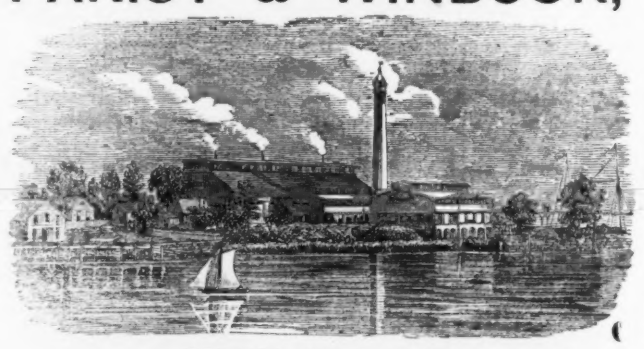
FIRST AVE., AND ROSS ST., PITTSBURGH.

BRANCH HOUSES

LOTHROP & CO., 16 Hamilton St., Boston. A. B. PARKER, 12 Cliff Street, New York.
W. F. POTTS, SON & CO., 1225 Market Street, Philadelphia.

FARIST & WINDSOR,

BRIDGEPORT, CT., 1872.



WINDSOR LOCKS, CT. 1860.

ALL DESCRIPTIONS OF

CAST STEEL

made to order for **Cutlery, Dies, Agricultural Implements. Decarbonized Steel, Frog Plates and Points, Steel Forgings to Pattern.** Quality equal to the best. Prices as low as the market admits.

JOEL FARIST. **JOHN B. WINDSOR.**

LABELLE STEEL WORKS.

SMITH, SUTTON & CO.,

MANUFACTURERS OF ALL KINDS OF

STEEL.

Also, Springs, Axles Rake Teeth, &c.

OFFICE & WORKS, Ridge, Lighthill & Belmont Sts., & Ohio River, Allegheny.
Post Office Address, Pittsburgh, Pa,

D. G. GAUTIER & CO.,

MANUFACTURERS OF

Hammered and Rolled STEEL of every description

JERSEY CITY, NEW JERSEY.

DUDLEY G. GAUTIER. JOSIAH H. GAUTIER.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.,

Office in New York City, 56 BROADWAY.

MANUFACTURERS OF

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING,

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

TRADE

PACE'S PATENT MAY. 8. 1866.

MARK

HOUSE ESTABLISHED, 1862.

GEORGE S. FALES,

SUCCESSOR TO

FAIRBROTHER & FALES

Sole Owner and Manufacturer of

Page's Patent Lace Leather,

And Manufacturer of

OAK BELTING,

Also, Picker or Moccasin Leather, for Boot and Shoe Packs.

Angular Belting and Pullies made to order.

PAWTUCKET, R. I.

Ask for Star Stamped Lace Leather.

Hardware.

SPEAR & JACKSON,

THE ORDER OF FRANCIS JOSEPH — VIENNA, 1873, TO JOSEPH B. JACKSON

Sheffield, England.

MANUFACTURERS OF

Saws, Files, Edge Tools & Steel.

THE CROSS OF THE LEGION OF HONOUR — PARIS 1855. TO SAMUEL JACKSON.

JOHN L. FISHER, Agent,

100 Chambers Street, NEW YORK.

JOHN WILSON'S CELEBRATED

GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.

BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.

THE TRADE MARK, IN ADDITION TO THE NAME,
IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY

JOHN WILSON.

BUYERS ARE SPECIALLY CAUTIONED AGAINST IMITATIONS OF THE MARK, AND THE SUBSTITUTION OF COUNTERFEITS BEARING THE NAME, "WILSON," ONLY.

Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

ALFRED FIELD & CO.,

Hardware Commission Merchants,

IMPORTERS AND EXPORTERS.

Principal Offices and Warehouses:

Birmingham, Sheffield & Liverpool, Eng.; New York, U. S.; & Montreal, Canada.

A large line of Birmingham and Sheffield goods in stock at

93 Chambers and 75 Reade Streets, NEW YORK.

HERMANN BOKER & CO.,

OFFICES AND WAREHOUSES:

NEW YORK, 101 and 103 Duane and 91 and 93 Thomas Streets.
REMSCHEID and SOLINGEN (Prussia.) H. BOKER & CO.
SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. ARTHUR LEE.
LIEGE (Belgium), Represented by Mr. LOUIS MULLER.

Manufacturers and Importers of **Cutlery, Guns, Hardware** and **Railroad Material.**
Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.
Proprietors of the **MANHATTAN CUTLERY CO.,** "O. K." Razors.
Sole Agents for **LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.**—Table Cutlery and Butcher Knives.
W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
Geo. Wostenholm & Son's Knives, Scissors and Razors, the largest stock in the U. S.
John Wilson's Butcher and Shoe Knives.
Peter Wright's and Armitage Anvils.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

REED & BARTON,

Manufacturers of **FINE**

Electro-Plated Table Ware

OF EVERY DESCRIPTION,

Would call especial attention to their new

Patent China-Lined

ICE PITCHERS.

These Pitchers are made of the finest quality of white metal, heavily plated with silver. They are finely engraved and chased in a great variety of decorations. The linings are of fine stone china. The top is secured to the body of the Pitcher in such a manner that it can be easily detached and the lining removed for cleaning or other purposes.

Many improvements attained are noticeable in these Pitchers. Water and ice standing in them do not come in contact with any metal whatever. They are perfectly clean, and easily kept so. They are perfectly free from all odor or rust. Lemonade, beer, milk, etc., may be kept cool in and drank from these pitchers without endangering health. There can be nothing cleaner or purer for holding liquids than pure, white china. There is no possibility of leakage.

The construction of the Pitcher is such that the lining can be easily replaced at a very small cost.

Factories, Taunton, Mass.

Salesroom, No. 2 Maiden Lane, New York.

THE CELEBRATED

Yale Locks

FOR ALL USES.

Ornamental Real Bronze Hardware.

YALE LOCK MFG. CO., Stamford, Conn.

Salesroom, No. 298 Broadway, New York.

PAT. DEC 23, 73

BLAKEMORE'S GRAVITY DOOR ALARM

USE NO SPRING

MANUFACTURED 3425 MARKET ST PHILA PA

SEND FOR CIRCULAR

Clark's Patent Noiseless

Pressure Blowers and Exhaust Fans.

E. W. WILD, *Agent*,

21 Cortlandt St., New York.

Portable and Stationary Engines, Boilers, Grist Mills, etc.

EDWARD BARR,

78 John Street, NEW YORK.

Tubes for Gas, Steam & Water.

⅜ to 14 inch. **Gas, Steam Fitters', Plumbers' and Machinists' Supplies.** Boiler Tubes, Iron and Steel Boiler Plates, Rivets, Tools, Etc. Railroad Cars and all kinds of Railway Supplies. Iron and Wood Work for Cars. Bridges and Buildings.

Agent for W. C. ALLISON & SONS.

Grain Scoops

AND

Back Strap Shovels,

WITH

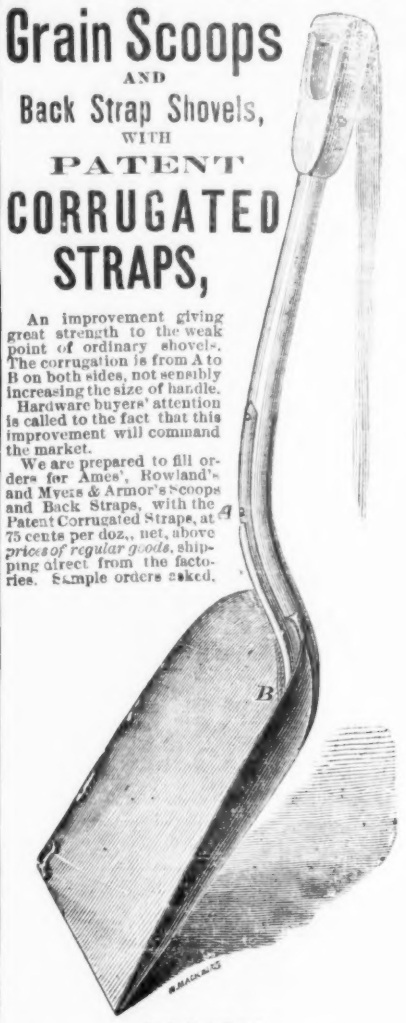
PATENT

CORRUGATED STRAPS,

An improvement giving great strength to the weak point of ordinary shovels. The corrugation is from A to B on both sides, not sensibly increasing the size of handle.

Hardware buyers' attention is called to the fact that this improvement will command the market.

We are prepared to fill orders for Ames', Rowland's and Myers & Armor's Scoops and Back Straps, with the Patent Corrugated Straps, at 75 cents per doz., net, above *prices of regular goods*, shipping direct from the factories. Sample orders asked.



FOR SALE BY

MACOMBER, BIGELOW & DOWSE, Boston.
LIVINGSTON HORSE NAIL CO., New York.
LLOYD, SUPPLEE & WALTON, Philadelphia.
PRATT & CO., Buffalo.
DUCHARME, FLETCHER & CO., Detroit.
JOHN PRITZLAFF, Milwaukee, Wis.
SEMPLE, BIRGE & CO., St. Louis.

FAIRBANKS' SCALES

R. R. TRACK, HAY, COAL SCALES.

SCALES
For Rolling Mills, Furnaces, Foundries, Miners' Use.

SCALES
For Stores, Mills and Wharfs.

SCALES
For Elevators and Grain Warehouses.

SCALES
For Farmers, Butchers, Druggists, &c., &c.

ALSO,

The Most Perfect Alarm Cash Drawer,

MILES ALARM TILL CO.'S. Also,

Herring's Safes, Coffee and Drug Mills, Letter Presses.

FAIRBANK'S STANDARD SCALES,

PRINCIPAL SCALE WAREHOUSES:

FAIRBANKS & CO., 311 Broadway, N. Y.
FAIRBANKS & CO., 166 Baltimore St., Baltimore, Md.
FAIRBANKS & CO., 53 Camp St., New Orleans.
FAIRBANKS & CO., 99 Main St., Buffalo, N. Y.
FAIRBANKS & CO., 398 Broadway, Albany, N. Y.
FAIRBANKS & CO., 403 St. Paul St., Montreal.
FAIRBANKS & CO., 34 King William St., London, E. C.
FAIRBANKS, BROWN & CO., 2 Milk St., Boston, Mass.
FAIRBANKS & EWING, Masonic Hall, Phila., Pa.
FAIRBANKS, MORSE & CO., 111 Lake St., Chicago.
FAIRBANKS, MORSE & CO., 139 Walnut St., Cincinnati, O.
FAIRBANKS, MORSE & CO., 182 Superior St., Cleveland, O.
FAIRBANKS, MORSE & CO., 48 Wood St., Pittsburgh.
FAIRBANKS, MORSE & CO., 5th & Main St., Louisville.
FAIRBANKS & CO., 309 & 311 Washington Av., St. Louis.
FAIRBANKS & HUTCHINSON, San Francisco, Cal.

MANUFACTURERS,

E. & T. FAIRBANKS & CO.,

ST. JOHNSBURY, VT.

For sale by leading Hardware Dealers.

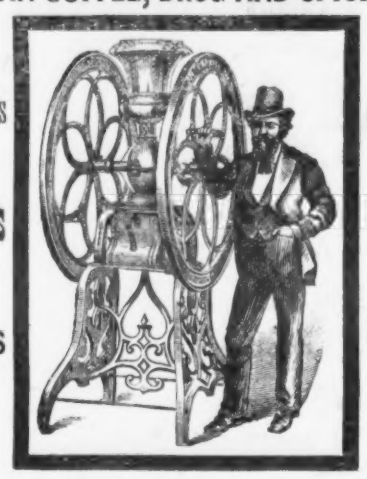
TWO SILVER MEDALS AWARDED

ENTERPRISE MANF'G CO. OF PA.

PHILADELPHIA,

FOR

AMERICAN COFFEE, DRUG AND SPICE MILLS.



Measuring Faucets

BUNG-HOLE BORERS,

TOBACCO CUTTERS

Cheese Cutters,

CORK PRESSERS

Etc., Etc.

GRAHAM & HAINES,

AGENTS,

88 Chambers St.

NEW-YORK.

NO EXTRA CHARGE FOR

NICKEL-PLATED HOPPERS WITH EAGLE DOME TOPS.

SEND FOR ILLUSTRATED CATALOGUE.

WHEELING HINGE CO.,

Wheeling, West Va.,

Manufacturers of

Wrought Butts, Strap & T Hinges, Wrought Hooks, Hasps & Staples, Wrought Repair Links & Washers,

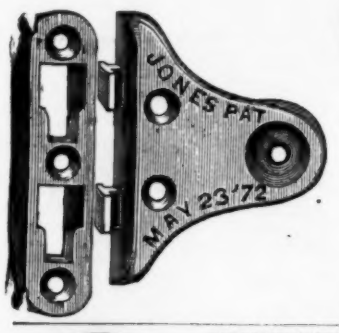
GRAHAM & HAINES, Sole Agents, 88 Chambers Street, N. Y.

AMERICAN BUTT CO.,

PROVIDENCE, R. I., Manufacturers of

Cast Butt Hinges,

AND



Miscellaneous Hardware.

Send for Illustrated Catalogue.

New York Warehouse with

Messrs. GRAHAM & HAINES,

No. 88 Chambers Street.

ORDERS FOR CASTINGS SOLICITED.

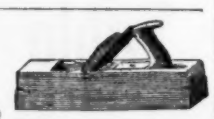
See New Bed Fast.

GREENFIELD TOOL CO.,

Greenfield, Mass.

Sole Manufacturers of the Celebrated

"Diamond" PLANE IRONS,



EXTRA PLATED TABLE CUTLERY. PATENT FORGED OX SHOES. The only Shoe made with concavity to fit hoof. BENCH AND MOULDING PLANES of every description, &c., &c. Drop Forgings to order. Address for Catalogue with stamp.

GEORGE T. RICHARDSON. FRANK H. SCUDDER.

Middleboro' Shovel Co.,

MANUFACTURERS OF

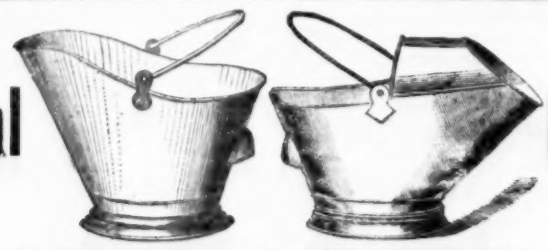
SHOVELS, SCOOPS & SPADES.

Office and Salesroom,

63 OLIVER STREET,

Works Middleboro, Mass. BOSTON.

J. CLARK WILSON & CO., New York Agents, 81 Beekman Street.

Coal  Hods.

EXCELSIOR TIN and SHEET IRON WORKS,

Successors to SMITH, BURNS & CO.,

Manufacturers of Plain, Stamped, Galvanized and Japanned

TIN WARE & SHEET IRON GOODS.

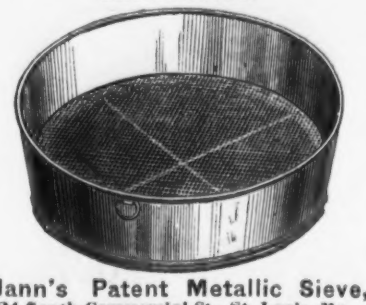
Coal Hods, Fire Shovels, Fry Pans, Water Pails, Well Buckets, &c., &c.

Factory and Warehouse, 47, 49, 51 and 53 South 5th Street, BROOKLYN.

Office and Sample Rooms, 66 Beekman Street, NEW YORK.

R. J. MANN & CO.,

Sole Manufacturers of



Mann's Patent Metallic Sieve,

24 South Commercial St., St. Louis, Mo.

The best sieve in use. To be had of all dealers.

A full assortment of these goods kept in stock at 88 Chambers Street, N. Y.

GRAHAM & HAINES, Sole Agents

SAMUEL LORING'S

PLYMOUTH TACK AND RIVET WORKS

PLYMOUTH, MASS., manufacturer of

TACKS, BRADS, NAILS AND

RIVETS.

Swedes and Common Iron Tacks; Leathered, Carpet Brush, Lace and Gimp Tacks; Finishing, Hungarian, 2d, 3d and 8d Fine, Trunk, Clout, and Cigar Box Nails; Black and Tinned Trunk Nails; Zinc, Iron, Copper and Steel Shoe Nails; Brads and Patent Brads; Glaziers' Points &c., &c., &c., COPPER, BRASS AND IRON RIVETS, of all kinds. Coopers' Rivets, from 1d to 6d, in casks of 100 lbs. each. Hose, Belt and Shoe Rivets and Burs. Oval and Countersunk Heads of extra lengths, made to order. SHIP AND BOILER RIVETS OF ALL SIZES AND LENGTHS

COBB & DREW,

Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets: Common and Swedes Iron, Leathered, Carpet, Lace and Gimp Tacks; Finishing, Hungarian, Trunk Clout and Cigar Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY

Grundy & Kenworthy

HARDWARE.

165 Greenwich Street.

Agent for the Philadelphia Star Carriage and Tire Bolts

FLUTING MACHINES.

The Celebrated K. F. M.

Manufactured for the Trade by

HENRY SOMMER.

8 to 12 Pearl Street, NEWARK, N. J.

Established in 1836.

Shelton Company,

Manufacturers of every variety of

TACKS & SMALL NAILS,

Carriage, Machine, Plow, Stove and Tire Bolts, Coach Screws, Bed Screws, &c.

BIRMINGHAM, CONN

Buy the COVERT SNAP

And you will buy no other. It is the most convenient, durable, safe and reliable Snap ever used. It has a brass coil spring that is four times as long as any other coil spring snap, and is enclosed in the barrel back of the bolt, making a snap which works freely under all circumstances, and without danger of having its parts broken or disarranged. We manufacture all sizes of Harness Snaps and Round Eye Snaps, and Covert's Patent Thimble to go on rope for Cattle and Horse Ties. Also other goods.

Send for price list and circulars.

HOLD BACK & SNAP CO., Troy, N.Y.

Established in 1839.

A. G. COES & CO.

WORCESTER,

Mass.,

Manufacturers of

THE GENUINE

COES'

SCREW WRENCHES.

Our goods have been very much improved recently, by making the *Bar WIDE*, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

A. G. COES'

NEW PATENT

FERRULE

Which cannot be forced back into the handle.

☞ Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 29, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be *vigorously prosecuted.*

We call particular attention to our new Patent Ferrule, with its Supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

A. G. COES & CO.

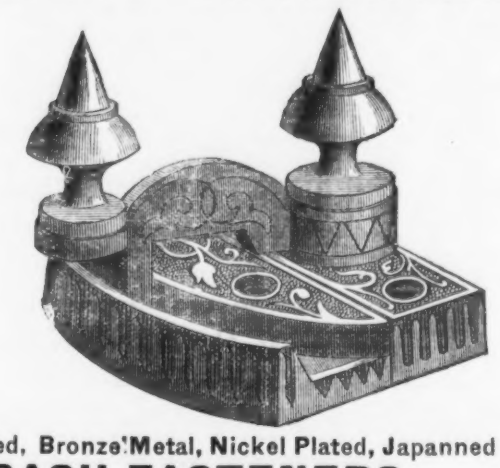
The Hart, Bliven & Mead Mfg. Co.,

18 & 20 Cliff Street, and 243 & 245 Pearl Street, New York.

Factories at KENSINGTON, CONN.

MANUFACTURERS OF

BUILDERS' HARDWARE.



Figured Enameled, Bronze Metal, Nickel Plated, Japanned & Brass

SASH FASTENERS,

Shutter Bars, Door Bolts, Cupboard Catches, &c., in great variety.

Our Catalogue and Appendix is now ready. Price $4·50 and charge remitted on receipt of subsequent orders.

QUACKENBUSH, TOWNSEND & CO.,

Hardware, Cutlery, &c.

59 & 61 Reade Street, N. Y.

Depot for THOS. JOWITT & SONS, (Sheffield, England,) FILES and HORSE RASPS.

Rough & Ready And CLIPPER SCYTHES, Warranted.

Manufacturers of the

Patented March 4, 1873.

Agents for Norwich Lock MFG. CO.

"BEAVER" (American) FILES and HORSE RASPS.

"WIDE AWAKE" AXES.

J. CLARK WILSON & CO.,

P. O. Box 2355. 81 Beekman St., New York.

The Axe for the Season of 1875 and '76.

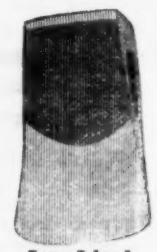
H. CLARK'S CAST STEEL AXES.

Every Axe fully Warranted.

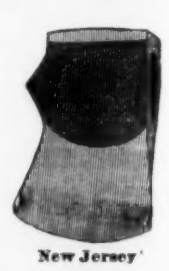
Western Beveled

Kentucky.

Rockaway Pattern.



Long Island.



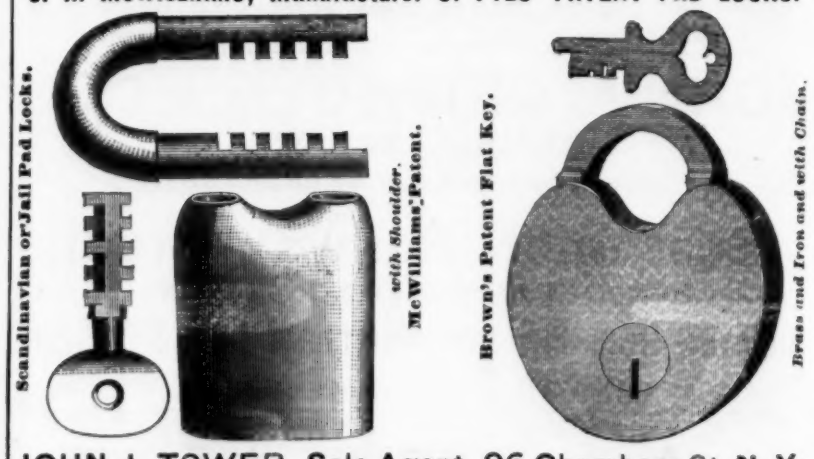
New Jersey

BRONZED OR RED.

Price per dozen..... .....$11 00 net cash. Beveled Axes, ...50c per dozen ext

☞ Send a Sample ORDER. ☜

J. H. McWILLIAMS, Manufacturer of PYES' PATENT PAD LOCKS.



JOHN J. TOWER. Sole Agent, 96 Chambers St, N. Y.

CAPEWELL'S

GIANT NAIL PULLER.

Saves Boxes, Nails and Labor.

Sold by all House Furnishing and Hardware Jobbers.

MALTBY, CURTISS & CO.,

MANUFACTURERS,

34 Reade Street, New York

General Agents for CAPEWELL'S LITTLE GIANT TACK HAMMER.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 0 per cent. per annum.

Anvils.—Solid Cast Steel.....₩ ℔ 14c
Peter Wright's, (Advanced April 1st.)₩ ℔, gold, 11½c
Wilkinson s..... " 11c
Eagle.....list 11 cents—dis 20 @ 20&10 %
Apple Parers.—Union.....per doz $7 00
Victor..... " 7 75
Domestic..... " 7 75
Reading..... " 7 75
Bay State Paring, Coring and Slicing..... " 15 00
" " Peach Parers..... " 10 50
10 d z. lots 50c. per dozen discount.
Axes.—Mann s Light.....Per doz. $12 00 @ 11 50
Hunt's Light..... " " 14 00 @ 12 50
Red Indian, all sizes..... " 12 00 @ 11 50
Red Chieftain, all sizes..... " 12 50 @ 12 00
Crown Prince..... " 12 50 @ 12 00
Augers and Auger Bits.—Pierce's Pat.
Twist Bits.....dis 30 %
Douglass' & Ives' Bits.....dis 40&10 %
Connecticut Valley Auger Bits.....dis 40&10 %
Cook s Bits.....dis 40 10&10 %
Jennings' Bits.....dis 10 %
Bates' Nut Augers.....dis 40&10 %
Douglass' & Ives' Augers.....dis 40&10 %
Watrous' Ship Augers.....dis 10&15 %
Honney's Pat. Hollow Augers.....dis 25 %
Stearns' Patent Hollow Augers.....dis 25 %
Balances.—
Landers, Frary & Clark's..... } Sold on Morton's new
Morton's..... } List.....dis 50 %
Chattillon's.....
Common Spring with Hook..... ₩ doz $1 38 @ 2 00
Bells.—Bevin Bros. Mfg Co. Light Hand Bells.....dis 70 %
Common (Tissue Paper Weight).....dis 70&10 %
Swiss Pattern Hand Bells.....dis 50 %
Connell's Door Bells.....dis 50&5 @ 50&10 %
Gt. Western & Kentucky Cow.. dis 50&10 @ 50 10&5 %
Boring Machines.—Bates' Mfg. Co., complete with augers.....dis 20 @ 25 %
Douglas Mfg. Co., complete with augers...dis 20 @ 25 %
Common Boring Machines, no Augers.....$4 00 @ 3 75
Angular..... " 5 00 @ 4 75
Bolts.—Eastern Carriage Bolts.....dis 75 %
Western " " .....dis 75 %
Philadelphia " " .....dis 60 %
" Eagle, (Coleman's).....dis 60 %
Wrought Snutter, Stanley.....dis 50 @ 50x10 %
Braces.—Barber s.....dis 40&5 %
Backus.....dis50 %
Bartholomew s American Ball.....dis 10&10 @ 15&10 %
Spofford.....dis 50 %
Butts.—Cast Fast Joint, Narrow.....dis 25&10 @ 30&10 %
" " Broad.....dis 35&10 @ 40&10 %
Cast Fast Loose Joint.....dis 45&10 @ 50&10 %
" Acorn, Loose Pin.....dis 40&10 @ 45&10 %
" Mavers & Parliament.....dis 35&10 @ 40&10 %
" Acorn Jap'd.....dis 45&10 @ 50&10 %
Wrought Loose Pin.....dis 35 %
" Table Hinges and Back Flaps.....dis 30 %
" Narrow.....dis 30 %
" Loose Joint.....dis 35 %
Parker's Blind Butts..... } Discount 60 %; by the case
Sheperd s " ..... } 60&10%.
Garretson's " .....
Clark's .....
Lull & Porter's Hinges....dis 60 %; by the case, 60&5 %
Garretson's Blind Butts Light No. 0.....} Discount 60 %
" " Lull & Porter Pattern } By the case 60&10 %
Cherrytree Blind Butts .....
Chains.—German Halter.....dis 20 %
" Coil.....dis 20 %
Galvanized Pump..... net 13 @ 13½c
Best Proof Coil Chain—
₩ ℔.. 14 10½ 9½ 9 8¾ 8½ 8c gold
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ in.
By the cask, 500 lbs., ½c per lb. less Common Chain. ½c per lb. less.
Chisels.—Socket Framing.....dis 60 @ 60&10 %
Socket Firmer.....dis 60 @ 60&10 %
Tang " .....dis 40&10 @ 50 %
Beaty s Framing and Firmer.....dis 2 %
Casters.—Iron Bed.....dis 50&10 @ 40 %
Porcelain Wheel Bed.....dis 40&10 @ 50 %
Iron and Brass Wheel Plate.....dis 40 @ 40&10 %
Porcelain Wheel .....dis 50 @ 50&10 %
Clothes Wringers.—Universa.....per doz $12 00
Novelty..... " 72 00
Discount on 2 dozen lots. $2 per dozen.
Coffee Mills.—Common Box and Side.....dis 15 %
Patent Box and Side.....dis 15 %
Cutlery.—American Pocket (best).....dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices.
Drawing Knives.—Hart Mfg. Co. s.....dis 60 %
Adjustable Handle.....dis 10 @ 15 %
Beatty.....dis 15 @ 50 %
Fry Pans.
Tinned.....dis 40 @ 45 %
₩ doz..$3 50 4 00 4 50 5 00 5 50 6 50 7 50 9 00 10 00
No..... 0 1 2 3 4 5 6 7 8
Burnished.....dis 40 @ 45 %
₩ doz..$5 00 5 75 6 25 6 75 7 25 8 00 9 00 9 00
No..... 0 1 2 3 4 5 6 7 8
Files.
Nicholson Mill Files.....new list
" Bastard..... "
" Taper..... "
Butcher's Mill (Advanced March 5th)...$5 25 to £ gold
" Bastard..... 5 25 to £ gold
" Taper..... 5 25 to £ gold
Fluting Machines.
K. F. M.—4½ in. rolls, $5 50.....dis 15 %
" —6 in. rolls, $6 50.....dis 15 %
Mrs Knox—4 in. rolls, $5 75.....dis 20 %
" —6 in. rolls, 7 00.....dis 20 %
Hammers.
Yerkes & Plumb's.....dis 15 %
Rammond & Son's.....dis 15 %
Verce.....dis 20 %
Hatchets.
Beatty's.....dis 15 @ 20 %
Shingling and Half. { ₩ doz...$7 00 7 50 7 75 8 00 / No..... 1 2 8
Yerkes & Plumb..... { ₩ doz...$7 00 7 50 8 00 8 50 / No..... 1 2 3 4
Claw.... { ₩ doz..... $7 50 8 00 / No..... 1 2 3
Hinges.
Strap and T. (Changed March 24).....dis 45 %
Horse Nails. Nos. 6 7 8 9 10
Ausable..... 27 26 24 23 22
Globe..... 28 26 25 24 23
Brundage..... 26 24 23 22 21
Nos. 5 6 7 8 9 10
Putnam..... 32 28 26 25 24 23
On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %
Knobs.—Door, Mortise and Rim.
Makes in Combination.....new list dis 45&5 %
Extra discount for cash 2 %
Mineral and Rim.....dis 5 %
Locks and Latches.—Rim and Mortise.....dis 40 %
Extra discount for cash 2 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 40 %
Extra discount for cash 2 %
Scandinavian Pad Locks.
₩ doz.....$10 50 10 50 12 00 13 00 15 00 15 00 } dis 15 %
No..... 9 9½ 10 10½ 11 11½ }
₩ doz.....$18 00 18 00 22 00 22 00 } dis 15 %
No..... 12 12½ 13 13½ }
Trunk Locks.....dis 5 @ 10 %
Thumb and Rozzens Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 62½ @ 62½&10 %
Lincoln s .....dis 40&10 @ 50 %
Landers, Frary & Clark's Petroleum.....dis 15&10 %
Taylor's Petroleum Faucets.....dis 20&10 %
Brass Liquor Cocks.....dis 20&10 %
Meat Cutters.—Dixon's.....dis 20 %
Woodruff.....dis 20 %
Stowe.....dis 20 %
Hale's.....dis 35 %
Stuffers.....dis 20 %
Planes.—Auburn Tool Co., " Bench .....dis 40 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 25&5 %
Evans Pat. Circular.....net
Plumbs and Levels.
Adjustable.....dis 60&10 %
Non-Adjustable.....dis 60, 10&10 %
Plane Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh.....
Rules.....dis 60, 10&10 @ 70 %
Rakes.—Cast Steel Garden.....dis 40 @ 40&5 %
Malleable Garden.....dis 40 @ 40&5 %
Wood Head Iron Teeth.....dis 40 %
Steelyards.—American Pattern.....dis 15 %
₩ dox.....$5 50 7 00 9 00 11 00 11 00 12 00
No..... 50 100 150 200 250 300
English Pattern.....dis 15 %
₩ doz.....$7 00 8 67 10 67 12 67 14 67 16 67
No..... 50 100 150 200 250 300
L. F. & C. Excelsior.....dis 10 %
₩ doz.....$9 00 10 00 12 00 15 00 18 00 21 00
No..... 50 100 150 200 250 300
Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened..... ₩ doz. $10 00 net
Golden Clipper No. 10, Boxed and Sharpened..... ₩ doz $9 75 net
Green Clipper No. 5, Boxed and Sharpened..... ₩ doz $9 50 net
Common Scythes..... ₩ doz $7 50 @ 9 00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 15 %
Disston's Hand.....dis 12½ %
W. McNiece s H'd. Cross-Cut & Circ'r, new list.dis 15 %
Boynton's Lightning, new list.....dis 40 %
" Champion.....dis 45 %
Shovels and Spades.
Rowland's Plain Back, Jan. 23d.....dis 40 %
" Back Strap " .....dis 40 %
Oliver Ames & Sons.....dis 20 %
Brady Shovel Co.....dis 20&5 %
Sad Irons.—Richmond (polished face).....per lb. 3¾c
Richmond (polished face)..... by the cask " 3¼c
Stone.—Arkansas Oil, No. 1..... ₩ ℔ $
Turkey Oil, No. 1..... "
Washita Extra..... net " 35c
" No. 1..... net " 30c
" " 2..... net " 25c
..... " 5½c

Screws.—Iron.....new list, Sept. 1st, 1875, dis 30 %
brass.....dis 30 %
Spoons.—
Plated.....dis 40&10 @ 50 %
Britannia, Boardmans (new list).....dis 50&10 %
" Parkers (old list).....dis 50 @ 50&10 %
German Silver.....dis 30 %
" Light.....new list dis 35 %
Lalance & Grosjean Iron.....dis 10 %
Springs.—Gray's Door.....dis 60&10 %
Torry's Door.....dis 60&10%
Stocks and Dies......dis 10&25 %
Stove Polish.—Gem.....₩ gross, $5 00
Onyx..... " $5 00
Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 72½ %
" " by the case...dis 72½&7½ %
Clout and Finishing Nails.....7½ %
" " by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation " " " .....dis 30 %
Vises.—Solid Box, currency..... ₩ ℔ net 14c
Wrenches.—Coes Genuine.....dis 40 @ 40&5 %
Coes Imitation Wrought Bar.....dis 50&50 & 10 %
" " Malleable Bar.....dis 60&10 %
" " (Kellogg) Malleable Bar.....dis 65&10 %
Tafts Pattern (Wrought Bar).....dis 70 @ 70&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " Improved Baxter.....dis 25 %
" " Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....(Advanced April 24th)..dis 42½ %
No. 19 to 26..... " " ..dis 47½ %
No. 27 to 30..... " " ..dis 52½ %
Coppered 0 to 12.....dis 15 @ 20 %
Tinned Broom Wire.....dis 35 %
Galvanized Wire No. 1 to 18.....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.
August 9, 1875.

Augers—Snell Mfg. Co.....dis 25 %
Axes—Francis.....
Bits, Auger—Snell Mfg. Co.....dis 25 %
Phœnix.....dis 40 %
Bells, Cow—Law s Genuine.....dis 30 %
Braces—Bit, Spofford's Patent.....dis 50 %
Brads, Cut.....dis 20 %
Boards—Stove, Brooks' Pat.dis 35 % 4 mos.; 35&5 % 30 dys
Butts—Brass.....dis 35 %
Wrought Narrow.....dis 30 %
" Broad, Loose Joint.....dis 35 %
" Table and Back Flaps.....dis 30 %
Wrought Butts, Loose Pin.....dis 35 %
Belting—Rubber.....dis 30 @ 10 %
Leather, new list, oak tanned.....dis 20 %
Brick—Bath (box of 2 doz) Best English.....$1 25
" Rutherford.....$1 00
Can Openers—Sprague's.....dis 50 %
Cases—Parlor Coal Hod.....dis 15 %
Chalk—White, Carpenter s .....₩ gross, 57c
Red, Carpenter's 90c
Chisels—Firmer Socket.....dis 60, 10&10 %
Framing Socket.....dis 60, 10&10 %
Corner Socket Chisels.....dis 60, 10&10 %
Slick's Carpenters'.....dis 60, 10&10 %
Castings—Malleable .....₩ ℔ 9¾c
Egg Beaters—" Peerless".....per doz $3 50
" Centripetal" .....per doz 5 00
Elbows—Corrugated..... 5 5½ 6 7 } dis 10 %
Charcoal.....$3 50 4 50 5 25 6 50 }
Russia..... 7 00 9 50 12 00 14 00 }
Files—Maischoss Bros.....dis 50 %
Fluters—Geneva Hand.....₩ doz. $15 00
Freezers Ice Cream—" Champion .....dis 33½ %
Hammers—Henry W. Kip's.....dis 10 %
Hinges, Gate—Shepard's.....dis 30&10 %
Hinges—Window Blind.....
Shepard s and Standard.....dis 60&10 %
Wrought Strap and T.....dis 33½&10&5 %
Hoes, Coal—Plain, Black and Galvan'd..new list dis 15 %
Funnel, Black and Galvanized..... " dis 15 %
Fancy and Helmet..... " dis 15 %
Sad Irons.....3¾c
Kettles—Brass..... ₩ ℔ 43c
Copper, " Hand Made".....38c. @ 40c.
Enameled.....dis 50&10 %
Knives, Drawing—Oval No. 1.....dis 60, 10&10 %
Razor Blade.....dis 60&10 %
Lanterns " Peerless. ....No. 1 3 5
₩ doz $36 00 $10 50 $13 75 dis 10 %
Tubular.....$11 00
" with Guards.....11 50
Machines—Apple Paring, " Keystone".....7 75 ₩ doz
Machines—Boring, Snell's.....dis 20 %
Mills, Coffee—Box and Side, common.....dis 15 %
Box Union and Eagle.....dis 15 %
" American .....dis 15 %
Molasses Gates—" Self Measuring".....dis 20 %
Nails—Clout and Finishing.....dis 20 %
Shoe.....dis 7½ %
Horse, Ausable.....No. 3 7 8 9 10
30 27 25 24 23 22c
" " Pointed & Polished.....add 1c ₩ ℔
" " 1000 lbs.....dis 5 %
" Clinton.....No. 6 7 8 9 10
21 19 18 17 16c
Packing—Rubber.....
Paint—White Lead, U. S. Gov't.....dis 30 @ 10 %
Pans—Dripping..... ₩ ℔ 10c
Rivets—Iron, Black and Tinned.....dis 25&7½ %
Screws—"American Screw Co"—
Flat Head, Iron.....dis 62½ %
Flat Head, Brass.....dis 52½ %
Skates and Straps—White's.....dis 20 %
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
Plated Rogers' A No. 1.....dis 50 %
Britannia.....dis 50&10 %
Squares—Steel and Iron.....new list 50 %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Stove Polish—Gem..... ₩ gross, $4 50
" Dixon's..... " 6 00
Tacks—Half Weight Am. Iron.....dis 72½&7½ %
Vases—Palace Coal.....dis 15 %
Vises—
Parallel, Buffalo...Old pattern, dis. 30 %; new, do.dis 20 %
Ware—French, Tinned and Iron.....dis 20 %
Stamped and Japanned.....dis 5 %
Cast Iron Hollow.....dis 40 %
Wire—Bessemer Steel.....dis 10 %

Tin Plates.—Add for each X.....2 50
10x14, IC. Charcoal...$10 00 | 14x20 C. terne.....$9 00
12x12. " ... 10 50 | 20x28 C. " 20 00
12½x17, " ... 9 50 | 20x28 X. " 25 00
14x20, " ... 11 00 |

Pig Tin—Straits..... 24c @ 25c
Bar Tin.....26c
Solder—No. 1, Crook's.....16 c
Sheet Zinc—
"Lasalle".....570 ℔ casks
$10 75 11 05 ₩ 100 ℔s
Sheets.....$10 75
Babbitt Metal.....₩ ℔ 12c
Iron Wire—Bright and Annealed.....dis 45 %
Coppered.....dis 40 %
Tinned.....dis 25 %
Tinned Broom, { Nos. 20 21 22 } dis 35 %
20c 21c 21c }
Copper—Sheathing 14 @ 18 oz.....₩ ℔ 30c
Planished..... ₩ ℔ 37c @ 39c
Bottoms..... ₩ ℔ 35c
Bolts..... ₩ ℔ 31 @ 33c
Braziers' Sheets..... ₩ ℔ 31 @ 33c
Sheet Iron.—
18 Common.....$4 05
24 Common.....4 25
26 Common.....4 45
24 W. D. Wood & Co., Smooth Finish..... 5 80
Am. Russia..... A. B.
14c 11c
Gen. Russia, No. 1 stained.....16½c
" " clean.....15½c
Galvanized.....dis 30 %

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal.....$10 50 @ 11 50
I. X. 10x14 Charcoal..... 12 50 @ 14 00
I. C. Terne 14x20..... 9 50 @ 11 00
I. C. Terne 20x28..... 20 50 @ 22 00
I. C. 20 inches Continuous..... 21 00
Block Tin.—
Pig.....₩ ℔ 26c
Bars.....₩ ℔ 27c
Solder.—
A l.....₩ ℔ 16c
Roofing.....₩ ℔ 17c
S. & Co.....₩ ℔ 21c
Lead.—Pig..... ₩ ℔ 7c @ 7¼c.
Bar..... ₩ ℔ 8½c
Copper.—
Ingot..... ₩ ℔ @ 24c
Plantsned..... " @ 38c
Sheathing..... " @ 31c
Copper Drops..... " @ 34c
Sheets., 6 to 7 lb..... " @ 37c
" 8 to 9 lb..... " @ 35c
" 10 to 12 lb..... " @ 33c
" 13 lb. up..... " @ 31c
Copper Bottoms..... " @ 33c
Zinc. Cask. 500 to 1000 lbs.....₩ ℔ 10½ @ 10¾c
Case, 100 lbs..... " 10¾ @ 11 c
Slab..... " 7½c
Brass.—Roll, No. 6 to 30..... ₩ ℔ 30c
Roll, No. 30 to 38..... " 35c
Wire, No. 0 to 20..... " 35c
" 20 to 25..... " 40c
" 25 to 30..... " 45c
Babbit Metal.—Sellew & Co..... " 30c
Allens'..... " 12c
Market..... " 12c
Antimony..... ₩ ℔ 11
Bismuth..... ₩ ℔ $4 00
Nickel..... ₩ ℔ $3 50
Russia Iron.—Bundle..... ₩ ℔ 17c
Less than bundle..... ₩ ℔ 18c
No. Stained..... ₩ ℔ 15c @ 16c

Sheet Iron.

	Com. B.	Fin. S.	Smoothn L. U.	Smooth D	Re'd.
15 to 20	4c		5 10c		7 10
22 to 24	4 10c		5 20c		7 20
26	4 30c		5 30c		7 30
27	4½c		5½c	•	7 50
30	5½c				

Galvanized Iron.—Full bundles.....dis 27½ %
Nos. 18 to 20.....12c | No. 26.....14c
22 to 24.....13c | 27.....15c
Bar Steel.—Silver, ₩ ℔ 16c Crescent, 21c.
Iron Wire.....dis 33 %
Enameled Ware.....dis 50 %

One Piece Corrugated Elbows.....dis 10 %

Charcoal Iron.		Russia Iron.	
4½ inch.....	₩ doz $2 50	4½ inch.....	₩ doz $5 00
5 "	" 3 50	5 "	" 7 00
5½ "	" 4 50	5½ "	" 9 50
6 "	" 5 50	6 "	" 12 00
7 "	" 6 50	7 "	" 14 00

Leader Elbows, Flat Crimp Retinned or Galvanized.—Dis. 10 %

	₩ doz.		₩ doz
3-inch.....	$1 75	2½-inch.....	$2 75
3-inch.....	2 25	3½-inch.....	3 25
4-inch.....	2 50	4½-inch.....	3 50

Sheet Iron Bread Pans..... ₩ ℔ 8½c
American Broilers..... ₩ doz. $13 50
Tinmen's Machines..... dis 5 %
Sad Irons..... ₩ ℔, 3½ @ 3¾c
Brass Kettles.—Anaonia..... 45c
Dog Irons..... 3¼c

PITTSBURGH.

The following are the Card rates of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent. Iron, standard list assorted sizes, for large orders, specifications to include Bands, small Rounds and Ovals, 2½c. rate, 2 % off net.
Flat Rail (1¼x¼), punched and coun'sunk..4½c ₩ ℔ net
Iron Wedges..... 4½c ₩ ℔ net
Norway Nail Rods..... 8½c ₩ ℔ net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)..... 4½c ₩ ℔ net
Beetle Rings..... 8 c ₩ ℔ net
Fence Pickets—
⅝ round, bent to shape, 23c ₩ ft. of fence, less 15 % off net.
Discount off Standard List.
Carriage and Tire Bolts..... 75 % off net
Carriage and Tire Bolts delivered on cars or boats in Pittsburgh.
Stove Bolts..... 20 % off net
Machine and Square Head Bolts..... 40&10 % off net
Coach and Lag Screws..... 40&10 % off net
Bolt Ends..... 40 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅝ in..... 8½c ₩ ℔ off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in..... 6½c ₩ ℔ off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅝ in..... 9½c ₩ ℔ off net
Washers, all made from new band iron, large sizes, from 7-16 to 1¾ in..... 7½c ₩ ℔ off net
Nuts and Washers in 25 lb. boxes, ½c ₩ ℔ ex. Nuts and Washers in lots less than one keg each size, ½c ₩ ℔ ex. Nuts and Washers in 5 lb. boxes, 1c. ₩ ℔ ex. net prices.
Standard Caps, for Plows..... 5½c. ₩ ℔ net
Iron Harrow Teeth, in lots of 1 ton or more, packed in 200 lb. boxes, 1 in. diam. 3½c ₩ ℔ net; ¾, ⅞ in. diam. 3½c ₩ ℔ net; 1 in. diam. 3½c ₩ ℔ net.
Patent Headed Harrow Teeth, packed in boxes ½c ₩ ℔ ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 5c ₩ ℔ net; 9-16 in. diam. 6c ₩ ℔ net; ¼ in. diam. 7c ₩ ℔ net. 1c ₩ ℔ extra when less than 1 keg of each size is ordered.
Strap & T Hinges...33¼&10 % off net, delivery as cuato'ry
Screw Hitching Rings..... $5 25 ₩ 100 net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long..... ₩ ℔ 3½c net
1 to 2 in. diam. from 4 to 8 ft. long..... " 4 c net
1 to 2 in. diam. from 1½ to 4 ft. long..... " 4¼c net
⅞, ¾ and ⅝ in. diam. over 4 ft.l ong..... " 4¾c net
⅞, ¾ and ⅝ in. diam. from 1½ to 4 ft. long " 5 c net
Bridge bolts w.th upset ends..... ½c. ₩ ℔ extra
Wrought iron plates, punched..... 4½c. ₩ ℔ net
Cast Iron Washers..... ₩ ℔ 3½c net
Duck Nest Tuyere Irons..... $14 50 ₩ doz net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10	in. long by	7-16	at Screw End,	₩ set of	8	bolts..	45c
12	"	½	"	"	8	" ..	55c
10	"	9-16	"	"	8	" ..	65c
12	"	9-16	"	"	8	" ..	70c
14	"	9-16	"	"	8	" ..	80c
10	"	⅝	"	"	8	" ..	80c
12	"	⅝	"	"	8	" ..	80c
14	"	⅝	"	"	8	" ..	90c
16	"	⅝	"	"	8	" ..	1 00
18	"	⅝	"	"	8	" ..	1 10
20	"	⅝	"	"	8	" ..	1 20

5c ₩ set for each additional inch over 14 in made. All lengths
In ordering Box Strap Bolts please give diameter at Screw End.
Wagon Box Rods, narrow track, each.....15c
" " wide track, each.....17c
Single Tree Irons, ₩ set of four pieces.....30c
Wrought Iron Bolster Plates, 2¼ in. wide, ₩ set.....45c
" " 3 " " 50c
" " 3½ " " 55c
" " 3¾ " " 60c
Wagon Brake Ratchets, each.....14 c
" " " finished with guard, each..40 c
Wrought Hammer Straps, heavy pattern, each.....18 c
" " " light " each.....12 c
" Rub Irons, each..... 9 c
Stay Chain Hooks, each..... 5½c
Double and Single Tree Clips, figure 1, each..... 8 c
" " " " 2, each..... 9 c
" " " " 3, each..... 11 c
Axle Clips, Round Part ⅝, Flat Part 1¼, each..... 8c
Wagon Clevis, including Pin, complete, each..... 10c
Pole Caps, each..... 21c
Single Tree Hooks, Nos. 1 and 2..... 4½c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks, Clevis and Pin, Clips, Single Tree Hooks, and Pole Caps, in lots of 50 sets..... dis 15 %
Wagon Box Staples, 1½ to 2¼ in. to clinch. ₩ 1000 $11 00 net
" " Bevel Box Iron. to rivet on. ₩ 1000 7 50 net
Neck Yoke Eyes, each..... 4½c net
" " with ⅝ rings, each..... 7½c net
King Bolts, ⅝, 1, 1¼, and 1¼ in. diam..... ₩ ℔ 4¼c net
Wagon Rivets, ex. large, flat, oval and steeple head, ¼ in. diam. all lengths..... " 8½c net
Wagon Rivets, 3-16 in. diam., all lengths..... " 9½c net
" ⅜ to 1 inch long..... ₩ ℔ 1c extra
" & Nails, in 5 ℔ paper boxes... " 1c extra
" in 25 ℔ wood " ..... " ½c extra
Wagon and Hinge Nails, ¼ in..... ₩ ℔ 17 c net
" " 5-16 in..... " 19 c net
Wagon Rivets and Nails, in less lots than one keg each size..... " ½c extra
Double Tree Plates..... " 5c net
Coupling " ..... " 5c net
Tongue " ..... " 8½c net
Neck Yoke Plates..... " 10½c net
Tongue Cap Iron, 1¼, 2 & 2¼ in. wide, same price ₩ ℔ as Band Iron.
Wagon Chains, Stay, Lock and Tongue, 5-16 in. ₩ ℔ 10½c net. ¼ in.. 11½c. net
Above prices are free on board cars in Pittsburgh. Subject to change of market, without notice.

DETROIT.

(Reported by Messrs. Jewett & Root.)
August 30, 1875.

Tin Plate.—Best Charcoal

IC, 10x14.....	$10 25
IX, 10x14.....	13 00
XX, 10x14.....	15 75
IC, 12x12.....	10 75
IX, 12x12.....	13 50
IC, 14x20.....	11 25
IX, 14x20.....	14 00
XX, 14x20.....	16 75
XXX, 14x20.....	19 50
XXXX, 14x20.....	22 25
DC, 100 Plate.....	9 75
DX, "	12 50
DXX, "	15 25
DXXX "	18 00
DXXXX 100 Plate..	20 75
IX, 14x14.....	21 50
IC, 10x14 W.....	9 75
IX, 10x14 W.....	12 50

Roofing Tin.—Best Char.

IC, Terne, 14x20..	$ 9 50
IX, " 14x20.....	12 25
IC, Terne, 20x28	20 00
IX, " 20x28.....	25 00

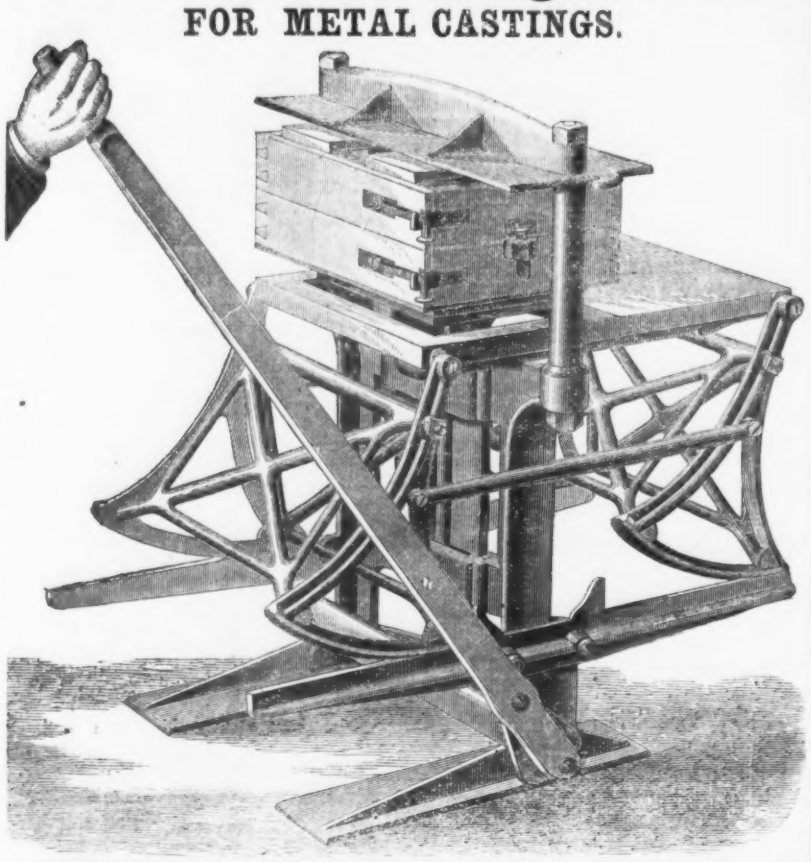
Coke Tin.—

IC, 10x14 Coke.....	$ 9 25
IX, 10x14, Coke	12 00
IC, 14x20, "	10 25

Solder.—No. 1..... 16c
No. 2..... 15c

Pig Tin.—
Large Pigs..... 24c
Small Pigs..... 25c
Bars..... 26c
Bright Wire.
63 lbs. in bdl.....dis —
Copper.—
Sheathing..... 31c
Copper Bottoms..... 32c
Planished Copper.—
Sheathing, 14x48..... 38c
Boiler Size, No. 7..... 40c
" " No. 8..... 40c
" " No. 9..... 40c
Sheet Iron.—
No. 18 Am. Com..... 4 00
No. 24 Am. Com..... 4 20
No. 26 Am. Com..... 4 40
No. 27, Am. Com..... 4 60
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $5 00
" 21 to 24..... 5 20
" 25 & 26..... 5 40
" 21 to 24 Char'l.. 6 70
" 25 & 26 " .. 6 90
RUSSIA.
Genuine..... 17c
Imitation..... 14c

Eames' Pat. Molding Machine
FOR METAL CASTINGS.



The above machines have recently been introduced in several large iron foundries in this country, where they have given entire satisfaction. Among the advantages are:

1st. A great saving in the cost of producing castings.

2d. A man can learn to mold with the machine in less than 30 days' time.

3d. The castings produced will be found more perfect, less poor work, and more uniform than if molded by the old method.

The machine is adapted for either Iron or Brass Castings. *Price Reduced.* For further particulars, send for Circular. Address,

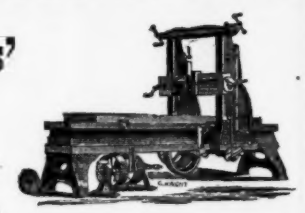
P. & F. CORBIN,
EXCLUSIVE LICENSES,
Also Manufacturers of *Architectural Bronze Work, Locks, Hinges and fine Builders' Hardware generally.*
New Britain, Conn. New York, 87 Chambers St.

Ewart's Detachable Drive Chain.
PAT'D.

Positive transmission without stretch; runs quietly and is frictionless; better than Belts for all exposed or irregular work, or for the attachment of slats or buckets, and for Transferring Power generally.

Address W. D. EWART,
Care CHICAGO MALLEABLE IRON CO., No. 116 Lake Street. Chicago, Ills.

Fitchburg Machine Co.
Manufacturers of
Machinists' TOOLS.
Office and Works,
Sumner Street,
FITCHBURG, MASS.



CENTENNIAL
SELF-LUBRICATIVE
Hemp Piston Packing
FOR
Locomotives, Steamships, Stationary Engines,
Hot or Cold Water Pumps.

Recommended by Master Mechanics and Engineers, as the cheapest and best in market. **No more Extortionate Prices. No more Fluted Rods**—but a good article at fair price.

JOHN CANFIELD & CO.,
SOLE MANUFACTURERS,
Office, 1321 Fairmount Ave., Phila.
PATENT APPLIED FOR. Send for Circular.

THE NATIONAL STEEL TUBE CLEANER.
Patented July 28, 1874.

Guaranteed to clean better, last longer & work easier than any in the market.
REMOVES ALL
Carbon and Scale from the Boiler Tubes.
ADOPTED AND IN USE BY UNITED STATES NAVY.
For sal by dealers.
THE CHALMERS SPENCE CO Foot of East 9th St., New York, Agents for the United States.

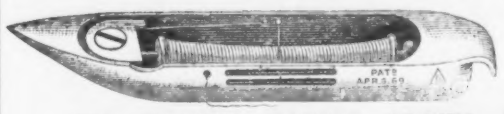
RICHARD DUDGEON,
No. 24 Columbia Street, New York,
MAKER AND PATENTEE OF
Hydraulic Jacks and Punches,
ROLLER TUBE EXPANDERS
And Direct-Acting Steam Hammers.
Communications by letter will receive prompt attention.
JACKS for Pressing on Car Wheels or CRANK PINS made to order

BILLINGS & SPENCER CO.
MANUFACTURERS OF
CLAMP, DIE AND COMMON
LATHE DOGS.

Vienna, 1873.

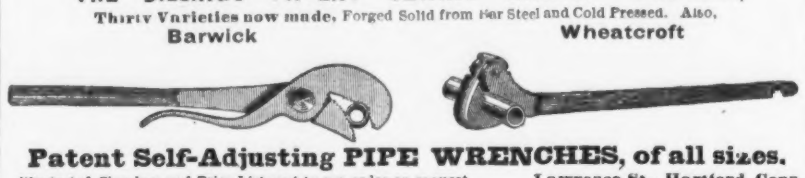
For Progress.

FIRST CLASS ARTICLES,
and something that every machinist and Tool Maker will appreciate.
Also, all Descriptions of **Wrought Iron & Steel**
DROP FORGINGS.
For Machine Handles, Lathe Wrenches, Spinning Rings, Marlin Spikes, Clinch Rings, Thumb Screws, Thumb Nuts, and Parts of Drill Chucks, Sewing Machines, Guns, Pistols, and
Machinery Generally.



TRADE B MARK.

THE BILLINGS PATENT SEWING MACHINE SHUTTLE,
Thirty Varieties now made, Forged Solid from Bar Steel and Cold Pressed. Also,
Barwick Wheatcroft



Patent Self-Adjusting PIPE WRENCHES, of all sizes.
Illustrated Circulars and Price List sent to any order on request. Lawrence St., Hartford, Conn.

AMERICAN TWIST DRILL CO.,
Woonsocket, - - RHODE ISLAND.
Sole Manufacturers of the celebrated
Diamond Solid Emery Wheel

Fast Cutting—Free from Glazing—It is the best Solid Emery Wheel.

Prices: 10x1, $2·00; 14x2, $9·75; 18x2¼, $20·00; 24x3, $42·00.
All other sizes at proportionate prices. State diameter of Holes in your orders for Wheels.
MANUFACTURERS OF
PATENT EMERY WHEEL MACHINERY,
And Automatic Knife Grinders
For the rapid and perfect grinding of Planer, Paper Cutting, Leather Splitting and other long Knives.
These goods are unsurpassed for elegance of design, workmanship, capacity and durability. First premium awarded by American Institute, N. Y., 1870 and '73; Medal and Diploma by M. C. M. A., Boston, 1874.

STURTEVANT
Pressure Blowers, Fan Blowers and Exhaust Fans.
10,000 SOLD IN SIX YEARS.
SEND FOR ILLUSTRATED CATALOGUE.
B. F. STURTEVANT, 72 Sudbury Street,
BOSTON, MASS.

☞ Two First Premiums awarded by Franklin Institute Exhibition of 1874.
C. VAN HAAGEN & CO.,
2341 and 2343 Callowhill Street, PHILADELPHIA, PA.
Manufacturers of Latest Improved Machine Tools, Rotary Shapers, two sizes, Iron Planers, all sizes, Horizontal Drill Attachments, for upright power drills, Self-feeding Portable Drills, hand or power, Expansion Boring Bars, five sizes, Universal Slide Rest, for taper work, Twist Drill Sharpening Machines, automatic and adjustable in every direction, Noiseless Friction Gears, for transmitting up to thirty horse-power.
Send for Descriptive Circulars.

BUSH HILL IRON WORKS,
Corner 16th & Buttonwood Streets
PHILADELPHIA.

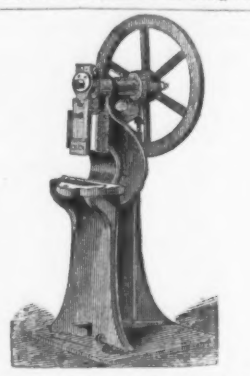
JAMES MOORE,
(Successor to MATTHEWS & MOORE,)
Engineer, Machinist, Founder and Boilermaker
CASTINGS of every description.
ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE
Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.
Sugar Mill, Saw Mill and Grist Mill Machinery,
AND MILLWRIGHTING IN GENERAL.
BOILERS—FLUE, TUBULAR AND CYLINDER, and all kinds of TANK AND PLATE IRON WORK

CLARK TOMPKINS
Manufacturer and Patentee of
UPRIGHT ROTARY
Knitting Machines,
Cone Winders for Hosiery Yarns,
NAPPERS FOR HOSIERY GOODS,
Stop Motions & Alarms for Knitting Machines,
Flock Cutters, and Flock Renovators.
EXTRA PARTS FURNISHED PROMPTLY.

☞ I am also prepared to furnish anything in the line of Gear Cutting from 5½ feet to ½ of an inch in diameter, any shape of tooth desired; Racks, Worms, Worm Wheels, Screws any size or number of threads to the inch, Wood Planing, Iron Planing, Large Lathe Work, Gear Cogging, Shafts, Hangings and Pulleys, also all kinds of Mill Work, Jobbing, and Machinery in general.

Shop, Foot of Cypress St., Troy, N. Y.

Particular attention paid to Experimental Machinery. We aim to maintain our reputation for doing work well.

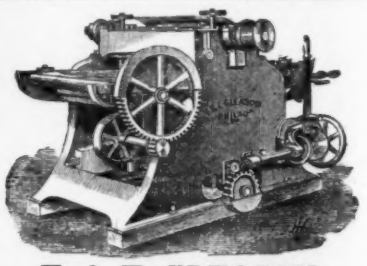


The American Institute, at their Fair in New York, will exhibit
A NEW
Drawing Press
FOR THE USE OF
Tinners & Brass Workers.
ALSO,
OTHER TOOLS
Manufactured by
The Stiles & Parker PRESS CO.
Of Middletown, Conn.

Mr. Stiles will meet parties by appointment made by letter or otherwise.

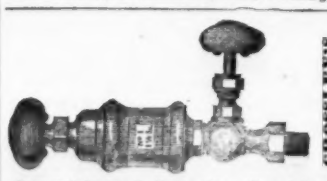
Exhibition opens Sept. 8th, and closes Nov. 13th, 1875.

JOSEPH WALKER, Prop. H. B. LYONS, Manager.
NEW MACHINERY WAREROOMS
915 Market Street, Philadelphia.
Hampson, Whitehill & Co.'s Stationary, Portable and Hoisting Steam Engines; Shive Governors, a Sure Regulator; Machinists' Tools, (the Pratt & Whitney Co.'s,) of world-wide reputation; Knowles' and Pulsometer Steam Pumps; Jones' Scales, "The Test;" Union Emery Wheels, and General Machinery.



E. & F. GLEASON,
Manufacturers of
IMPROVED WOOD TOOLS.
27 Haydock St., Philadelphia.

The Best Paper! Try It!!
The **Scientific American** is the cheapest and best illustrated weekly paper published. Every number contains from 10 to 15 original engravings of new machinery, novel inventions, Bridges, Engineering works, Architecture, improved Farm Implements, and every new discovery in Chemistry. The Scientific American has been published weekly for 30 years, and stands foremost of all industrial papers. A year's numbers contain 832 pages and several hundred engravings. Thousands of volumes are preserved for binding and reference. The practical receipts are well worth ten times the subscription price. Terms, $3·20 a year by mail, including postage. Specimens sent free. May be had of all News Dealers
PATENTS obtained on the best terms. Models of new inventions and sketches examined, and advice free. All patents are published in the Scientific American the week they issue. Send for Pamphlet, 110 pages containing laws and full directions for obtaining Patents.
Address for the Paper or concerning Patents.
Munn & Co., 37 Park Row, New York
Branch Office, cor. F and 7th Sts., Washington, D. C



Corner Adams & John Sts., Brooklyn, N. Y.

HOLSKE MACHINE CO.,
279 Cherry St., near Jefferson St.
ELEVATORS
For Hotels & Stores a specialty.
Machinery in General made to order.

BOSTON.

(*Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.*)

Augers.—Watrous Ship....dis 10 %
L'Hommedien Ship....dis 15 %
Axes.—Forester's Favorite, Bronzed....$12 00
Blue Jackets, Blue....11 5
Excelsior, Black....11 00
Chopper's Pride, Bronzed....10 50
Red Cross, Red....10 00
Red Cross, Handled....12 50
Boy's Handled Blue Jackets....12 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2·50. B (No. 1) $2·00. C (No. 2) $1·50 ₩ doz
Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1....$1·70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 26, No. 1....1·80
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1....·28
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 36, No. 1....2·50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1....3·38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 36, No. 1....3·50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1....per pair, 50c.
Common, 6, No. 1.... " 45c.
Blind Hinges.—
Orr or Washburn's....per hundred sets $9 50
Blind Fasts.—
Orr or Washburn's....per hundred set $6 00
Bolts.—Carriage, Phila., "Girard Works....dis 50&10 %
Borax.—Best Refined....₩ ℔ 15c
Borers.—Angle, Backus'....dis 30 %
Boring Machines.—Angle....each $4 75
Common, Snell's quality....each 3 75
Braces.—Barber's....dis 40&5 %
Backus'....dis 50 %
Spofford's....dis 50 %
Amidon....dis 50 %
Brackets.—Star Bronzed....new list net
Star Japanned....new list net
Store Shelf....new list net
Brass Faucets.—L. F. & C....dis 25&10 %
Butts.—Union Drilled Loose Joint....dis 45&10 %
" " Wire Fast Joint....dis 25&10 %
" " Acorn Loose Joint....dis 45&10 %
Brass Butts....dis 30 %
Wrought Table Butts and Back Flaps....dis 30 %
Wrought Narrow Butts....dis 30 %
Can Openers—Sprague's....dis 50 %
No. 1, Iron Handle....$4·00
No. 2, Wood Handle....4·50
Cartridges.—"U. S. Cartridge Co."....dis 50&10 %
Chisels.—"Buck Bros.' Shank Goods....add 20 @ 22½ %
Socket....add 22½ @ 25 %
Churns.—Lightning—
Redheffer patent.... 3 4 5 6 gall
per doz $22 00 $27 00 $31 50 $36 00
Coal Hods....dis 40 %
Fancy Japanned, No. 4, 15 in., $8·00; 5, 16 in., $9·00; 6, 17 in., $10·00.
Fancy Galvanized, No. 4, 15 in., $11·50; 5, 16 in., $13·00; 6, 17 in., $14·00.
Perfection, Jap'd, No. 4, 15 in., $12·00; 5, 16 in., $13·00; 6, 17 in., $14·00.
Perfection, Galv'd, No. 4, 15 in., $15·00; 5, 16 in., $16·00; 6, 17 in., $17·00.
Morning Glory, Jap'd, No. 4, 15 in., $12·00; 5, 16 in., $13·00; 6, 17 in., $14·00.
Morning Glory, Galv'd, No. 4, 15 in., $15·00; No. 5, 16 in., $16·00; No. 6, 17 in., $17·00.
Compasses and Dividers.—Bemis'....dis 35 %
P. S. & W....dis 25 %
Cordage.—Manila (usual trade dis.)....₩ ℔, 15c
American Tarred Hemp Lath Yarn....₩ ℔, 10c
Corn Hooks....per doz $2·75
Cow Ties....dis 10 %

No. 30, Open Ring,	3 foot,	No. 6,	with Toggle	....	$3·70
No. 35, "	3 "	No. 6,	" Snap	....	3·90
No. 40, "	3½ "	No. 5,	" Toggle	....	4·23
No. 45, "	3½ "	No. 5,	" Snap	....	4·40
No. 50, "	4 "	No. 4,	" Toggle	....	4·85
No. 55, "	4 "	No. 6,	" Snap	....	5·00
No. 60, "	4½ "	No. 3,	" Toggle	....	5·60
No. 65, "	4½ "	No. 3,	" Snap	....	5·80

Crow Bars.—Iron, Steel Points....₩ ℔, 5¼c
"Sweet" Steel Bars....₩ ℔ 11c
Brown's Steel Bars....₩ ℔ 10c
K. P. & Co. Extra Drill Steel....₩ ℔ 15c
Dividers.—Cook's Nickel Plated....dis 15 %
Door Springs.—Stimson's Patent.—
No. 7, Light inside doors, $12·00....dis 25 %
No. 8, " outside " $18·00....dis 25 %
Torrey's....$4·00
Gem....1, $4 00; 2, $3 50; 3, $3 00 ₩ doz
Egg Beaters.—Lightning, Redheffer pat. 1 qt. 4 qts.
per doz $8 00 $12 00
Emery.—Alden....₩ ℔ 6½c
Wellington Mills....₩ ℔ 10c
Files.—Earl Smith & Co.'s English....$5 to £ gold
American....$5 to £ currency, less 12½ %
Nicholson....new net list
Wheeler, Madden & Clemson....£5 net
Stubb's Tapers, genuine, 3 in., $1·50; 3½, $1·62; 4, $1·88; 4½, $2·18; 5, $2·50.
Funnel Irons.—$2·50 2·50 2·50 3·25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$3·50 3·75 4·00
5, 5½, 6 inch.
Hammers.—Maydole....dis 12 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $9·75
" " " " " " bell face, No. 1, $11; 1½, $9·75.
Hangers & Rollers.—Novelty....dis 30 %
Anti-Friction....$1 25 per pair—dis 30 %
Hatchets.—Underhill Edge Tool Co....dis 15 %
C. F. Dowse, warranted Cast Steel—
Shingling....0, $4·75; 1, $5·25; 2, $5·75
Claw....1, 5·75; 2, 6·25
Lathing....1, $5·50
Axe Pattern....1, $7·00; 2, 7·50
Broad....0, $5·75; 1, $6·50; 2, $7·50; 3, $9·25; 4, $10·75; 5, $12·75; 6, $14·75.
Hinges.—Strap and T, Stanley Works....dis 33⅓&10 %
Plate, Loose and Fast Joint....₩ ℔ 6c
Wrought Screw Hook....₩ ℔ 6½c
Knobs.—Young's Imp. Silverd Glass....dis 45 %
Lanterns.—Tubular No. 0....$11·00
Guarded, No. 74, (with kerosene oil and candle burners)....6·25
Anti-Tubular....8·00
Lead.—Sheet and Pipe....9½c—less 10 %
Locks.—Norwalk Lock Co....dis 40&5 %
Mattocks.—
K. P. & Co., axe finish, long cutter....$13 00—net
Short cutter....12 75—net
Meat Cutters.—"Miles's" Challenge....dis. 20 %
No. 1, $22·00; 2, $30·00; 3, $40·00.
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ₩ ℔
Nails.—10d and larger....$3 25 net
Nail Pullers.—Little Giant—Small....per doz., $22·00
Little Giant—Large.... " 30·00
Padlocks.—Wilcox....dis 40&5 %
All Brass, 2¼ inch, 2 keys, job lot....$9 00
Paper.—Tar'd Sheathing....₩ ℔ 2 c
Dry Sheathing.... " 3¼c
" " "Beaver Brand" Rosin Sized.. " 4½c
Tar'd " " " .... " 3½c
Felt " " " .... " 4½c
Virginia Cane Fibre....4½c
Picks.—K. P. & Co., Solid Eyes....5 to 6 6 to 7
$9 00 $9 50
Pins.—Universal Hat and Coat all wood—
2 in....₩ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Potato Digger.—
"Partridge," 6 square tine....₩ doz $12 00
Shumway & Co., 6 round tine....₩ doz 9 00
Pulleys.—Axle.
Frame Pol. Wheel....No. 150, 20c., 1¾ in.; 16, 38c., 2 in.
Common Axle....No. 18, 34c., 1¾ in.; 26, 40c., 2 in.
Milled Axle....No. 2, 42c., 1¾ in.; 2, 50c., 2 in.
Nashua Pat. Axle Bronzed Face...1¾ in., 80c; 2 in., 90c
Cast Steel Axle....2 in., $1·00
Pulley Blocks.—"Best Boston Make"....net
Common Strapped Blocks—

	4	5	6	7 inch.
Single,	75c.	88c.	$1·00	$1·13 each.
Double,	$1·00	1·12	1·25	1·60 "

Inside Iron Strapped Blocks—

	5	6	7	8	7	10 inch.
Single,	$1·00	1·13	1·38	2·00	2·25	1·75 each.
Double,	1·88	2·30	2·62	3·63	4·00	5·00 "

Inside Iron Strapped Blocks, with Patent Roller Bushings—

	5	6	7	8	9	10 inch.
Single,	$1·25	1·50	1·65	2·50	2·65	3 50 each.
Double,	2·50	3·00	3·38	4·63	5·00	6·50 "

Plated Ware.—Rogers Bros....dis 50 %
Plumb & Levels.—"Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels....dis 50 %
No. 2, First Quality Levels....dis 60&10 %
No. 3, Iron Pocket " ....dis 35 %
No. 4, Level and Plumb Glasses....dis 60&10 %
No. 5, Iron Pocket Levels, per square and straight edge....dis 50&10 %
No. 6, Improved Iron Bench Planes....dis 20&10 %
Pocket Knives.—Conn. Cutlery Co....new net list
American Shear Co....dis 33⅓ %
Rail Barn Door.—For Novelty and Anti-Friction Hangers....per foot 7c.. dis 30 %
Rivets.—Black....dis 35 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8.
18 13 14 14 15 16c ₩ ℔ net
Rubber Moldings.—"Harmon's"....dis 10 %
No. 2, for Windows....per foot, 5c
No. 3, for Doors....per foot, 10c
No. 4, " ....per foot, 12c
Sad Irons.—Bless & Drake....₩ ℔ 4c
Sand Paper—0 to 2, $4·25; 2 to 3, $4·75....dis 10 %
Saws.—*Hand and Panel*—
Wheeler, Madden & Clemson's, same list as "Disston's"....dis. 15 %
Disston's....dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts....per ft., 37c
" " "Star" X Cuts. " 60c
" " " Champion X Cut. " 50c
" " " One Man X Cut..each, $2·25
Boynton's genuine Lightning X Cut....per ft., 60c
" " " One Man X Cut..each, $2·25
Circular—Wheeler, Madden & Clemson's....dis. 25 %
Mill— " " " ....dis. 25 %
Screws.—Am. Screw Co., new list Sept. 1st....dis 30 %
Aiken's....dis 30 %
Scythe Stones.—
"Willoughby Lake," first quality....₩ gross $6·50
" " second quality.... " 3·00
Shovels.—O. Ames....dis 20 %
M. B. & D....dis 20 %
Snow, Malleable Iron Tip, D Handle—Agents for New England....$6·50
Snow, Malleable Iron Tip, long Handle—Agents for New England....5·50
Sifters.—Coal, Rice, &c....$12 00
Spading Forks.—M. & E....dis 25 %
Stone Pickers.—"Partridge," original...₩ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's..$8·00 per doz
Traps.—Oneida....dis 25 %
Blake's....dis 30 %
Vises.—K. P. & Co.'s Solid Box Blacksmith....₩ ℔ 13c
Parker's Parallel....dis 10 %
Backus....dis 25 %
"Howards," Parallel....dis 20 %
Wardrobe Hooks.—Wire to drive....₩ gross $1 00
Weather Strips.—"Harmon's"....per doz $5, dis 10 %
Weights.—Window Weights....₩ ℔ 2c
Wedges—Axe....₩ ℔ 3c
Wire.—
Eureka, in spools, No. 28 to 40 assorted...₩ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green. Drab or Black....₩ ft 5½c
Wrenches.—Genuine Wrenches, G. A. Coes..dis 40&5 %
Walton....dis 50 %
Wringers.—
Novelty and Universal } Tub No. 2 } ....Less than doz, $72 00; ....2 doz or more, 70 00
Bench A... less than 2 doz $86 00; 2 doz or more $84 00
" B... " " 94 00 " " 92 00
" C... " " 110 00 " " 107 00
Eureka....per doz $60 00
Withington, Cooley & Co.—
Hoes, Rakes, Forks, &c....dis 33⅓ %

Boston Metal Market.

(*Corrected by Fuller, Dana & Fitz, 110 North Street, Boston, Importers and Commission Merchants.*)

September 1, 1875.

Iron.—Best Refined Bar Iron....₩ ton $60 00
"Burden Best" " " .... " 95 00
Swedish Bar Iron....gold " 110 00
Norway Shapes....gold " 125 00
Norway Nail Rods....gold " 130 00
Sheet Iron, American....₩ ℔ 4½c
" " Galvanized.... " 9 c
" " Russian....gold " 18¾c
Plate Iron, C. No. 1.... " 3½c
Iron Rails....₩ ton $50 00
Steel Rails.... " 77 50
Pig Iron, Foundry, No. 1 extra.... " 28 00
" " No. 2 extra.... " 25 00
" Gray Forge.... " 28 00
" Scotch.... " 30 00 @ 32 00
Wrought Scrap Iron.... " 31 00
Old Rails.... " 28 00

Steel.— ₩ ℔
Eng. Tool, gold 15½c
American Tool 14½c
" Mach 9½c
Bessemer 7 c
German....₩ ℔ 9½c
Spring.... 8 c
Tire.... 6 c
Sleigh Shoe.... 4½c
Toe Calk.... 7½c

Tin Plates.—₩ box gold
I. C. Char. 10x14....$8·00
I. C. Coke 10x14....7 00
Char. Roof. IC. 14x20. 7 50
Coke " IC, 14x20, 6 50

Copper.— ₩ ℔
Ingot.... 23½c
Bolt.... 30c
Sheathing.... 30c

METALS.

Pig Tin.— ₩ ℔., gold
Banca.... 21c
Straits.... 19c
English.... 19c

Lead.— ₩ ℔
Pig.... 7½c
Sheet & Pipe.... 8·55
Zinc.—Sheet..₩ ℔ 10c
Spelter.....₩ ℔ 7½c
Antimony. gold ₩ ℔ 12½c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Apple Parers.—Conqueror....₩ doz, $7 75
Hudson's Rotary.... " 7 75
Axes.—Wm. Mann's, Red Warrior....₩ doz $11 50
Wm. Mann's, W. Stewart's.... 12 00
" C Marshall.... " 10 50
" Handled.... " $5 extra
" Double Bitted.... " 2. 50
H. L. B. & Co.'s, L. & Co.... " 11 50
" Pioneer.... " 12 00
" James & Co.... " 11 00
Hunt's.... " 12 00
Axles.—"Jones, Henry & Co.'s" Patent Lubricating, Half Patent, Swelled Taper, Plain Taper and Concord Axles....dis 10 & 5 %
Common Axles (Pat. Lubricating), 1½ inch and upward....₩ ℔. 6½c.
do. less than 1½ inch.... " 7 c.
Bellows.—Best St. Louis make..60c ₩ in. dis 20&2½ %
Bells.—Troy, Church, School and Farm Bells..₩ ℔ 42c
"Improved Amalgam Bronzed," 15 in., $3·00; 17 in., $4·00; 19 in., $6·00....net
Belting.—"Boston Belting Co.'s Rubber..dis 30&7½ %
"Bradford & Sharp's" Oak-Tanned Leather....dis 30 %
Bolts.—Arms, Bell & Co.'s Carriage & Tire..dis 70&10 %
Arms, Bell & Co.'s Machine....dis 30&10 %
Butts.—Western Butt Co.'s new list—
Narrow Fast Joint....dis 25&10 %
Broad Fast Joint....dis 3 &10 %
" Loose " ....dis 45&10 %
Reversible....dis 40&10 %
" Japanned and Silver Tipped....dis 45&10 %
Loose Joint "Acorn" " " ....dis 45&10 %
Wheeling Hinge Co.'s W't Fast Joint Nar....dis 30 %
" " " Broad....dis 35 %
" " Loose Joint....dis 35 %
" " Reversible....dis 35 %
" " Table & B'k Flaps.... 30 %
Churns.—Julian, No. 2, $7·00; No. 3, $7·50; No. 4, $8·50....dis 25 %
Cider Mills.
American Senior, $40·00; Am. Junior, $25·00....dis 20 %
Corn Knives.—Dunn Edge Tool Co.'s Clip...₩ doz 5 00
Seymour Mfg. Co.'s Solid Steel Back.... " 4 00
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers....dis 10 %
Hand Shellers....Special rates
Cotton Gins.—The Carver, 10 in. Saw, $4 a Saw..dis 15 %
12 in. Saw, $4·50 a Saw....dis 10 %
Crow Bars.—Steel Pointed....℔ 6½c
Drag Saw Machines.—
Culver's Iron Drag Saw....dis 10 %
Robinson's Patent Sweepstakes Drag Saw....dis 10 %
Fanning Mills.—Nash & Cutt's....dis 20 %
Feed Cutters.—Improved Burdick National...dis 20 %
Sanford No. 1, $10 75; No. 2, $8 00....net
Files.—Black Diamond, Mill....$8·00 £ currency.
" Bastard....8·00 £ currency.
" Taper....8·60 £ currency.
Forges.—Keystone Portable Forge Co.'s....dis 12½ %
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks....dis 33⅓ %
" " Handled Hoes....dis 33⅓ %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe....dis 15 %
" Planet Drill, Nos. 2 and 3....dis 15 %
" Combined Drill and Wheel Hoe....dis 15 %
Grinding Mills.—Challenge Feed Mills....dis 15 %
Sedgebeer's Nonpareil Mills....dis 15 %
Hammers.—Masons' Hammers....₩ ℔ 20c
Smiths' Hand.... 20
Handles.—No. 1 Fork, Hoe and Rake....dis 20 %
No. 2 Fork, Hoe and Rake....dis 40 %
Harrow Teeth.—1 inch Iron....₩ ℔ 4½c
¾ and ⅝ inch iron.... " 4¾c
Barbed or Headed....½c extra
Hay and Cotton Presses.—
Dederick's Railroad....net list
" Perpetual....net list
Hay Knives.—
Dunn Edge Tool Co.'s....₩ doz $15 00—dis 15&5 %
Lightning (Weymouth's Patent)....₩ doz $20 50
Hinges—
Wheeling Hinge Co.'s Strap & T....dis 33⅓&10 %
Horse Hay Fork.—Nellis' Harpoon....dis 25 %
Horse Nails.—National Patent Pointed....20c rates
National Patent Pointed, extra finished....24c "
Horse Powers.—Pitts or Carey's Patent....dis 10 %
Wheeler's Railway....dis 10 %
Sandwich Lever....dis 10 %
Horse Rasps.—Heller Bros....dis 45 %
"Black Diamond"....$6·00 to the £ currency
Horse Shoes.—
Rhode Island (Perkin's Pattern)....₩ keg, $5 50
" Mule.... " 6 30
" Trotting Shoes.... " 8 00
Tredegar Horse....per keg $5 50
" Mule....per keg 6·50
Hose.—
Boston Belting Co.'s Rubber Medium Sizes..dis 30&10 %
" " " Small Sizes, Hydrant....dis 40 %
Ice Tools.—W. T. Wood & Co.'s Saws....new list net
W. T. Wood & Co.'s Chest Hatchets....new list net
" " Axes....new list net
" " Loading Tongs....new list net
" " Medium, Small and Family Tongs....new list net
" " Chisels, Hooks and Grapples....new list ne
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks....₩ doz $13 00 @ 18 50
" " Grub Hoes, oval eye.... " 10 00 @ 11 30
Money Drawers.—
Pierpont & Co.'s Excelsior....per doz $40·00 net
Nails.—Wheeling....$3 25 rates
Packing.—Boston Belting Co.'s Rubber, Plain..dis 30 %
Boston Belting Co.'s Rubber, Pure....dis 25&5 %
" " No. 2 Plain....dis 40 %
" " Round and Square....dis 10&10 %
Picks.—Klein, Logan & Co.'s Railroad and Clay....₩ doz $9 30 @ 11 00
Klein, Logan & Co.'s Coal.... " 7 45 @ 8 40
" " Poll.... " 12 60 @ 15 50
" " Stone.... " 14 40 @ 14 90
" " Tamping.... " 14 75 @ 15 35
" " Miners' Drifting.... " 10 25 @ 12 80
Plows.—Avery's Cast and Steel....dis 20 %
Collins Cast Cast Steel....new list net
Pekin Steel....new list net
Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $32....dis 20 %
Pulleys.—5 inch....per doz $4·25 net
4 inch....per doz 3·25 net
Nellis' Patent....new list dis 15 %
Pumps.
St. Louis, Farm, Patent Metal Lined...new list dis 50 %
Rakes.—Paddock's Premium Sulky....$28 00 net
St. Louis Revolving 14 tooth.... 4 65 net
" " 16 " .... 4 90 net
" Hand Hay Rake....dis 20 %
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives....dis 40 %
" Sections....dis 40 %
Road Scrapers.—Steel....dis 45 %
Cast Iron....dis 10&5 %
Sad Irons.—Monitor Brand, Silver Polished..₩ ℔ 4½c
Sash Weights.—Standard Solid Eyes....₩ ℔ 4c
Saws.—Curtis & Co....dis 10 %
Scythes.—Dunn Edge Tool Co.'s....new list dis 20&5 %
Scythe Stones.—No. 1 Ind'n Pond ₩ gr's, $7 00 }
Extra Indian Pond.... " 7 50 }
Premium.... " 10 50 } dis 25 %
Diamond Grit.... " 13 00 }
Shovels and Spades.—Myers & Armor....dis 15 %
O. Ames & Son....dis 12½ %
Grain Scoops, Pat. Corrugated Straps M. & A. dis 15 %
" " " T. Rowland's dis 15 %
" " " O. Ames & Son dis 12½ %
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished....₩ ℔ 15c
Solid Cast Steel.... " 35c
Snaths and Cradles.—Seymour Mfg. Co.'s..dis 20 %
Sorghum Machinery.—Bell Cane Mills....dis 15 %
Scantlin's Seamless Evaporators....dis 10 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express....dis 12½ %
Blue Seat Springs....dis 15 %
Vises.—Solid Box....₩ ℔ 16c
Wilson Mfg. Co.'s....dis 15 %
Wheelbarrows.—Railroad & Garden....new list net
Wrenches.—Coes' Genuine....dis 33⅓ %
Coes' Pattern....dis 50
Wagons.—Whitewater Farm Wagons—
Thimble Skein....No. 3, $76; 3¼, $80 3½, $81
Iron Axle....No. 1½, $80; 1¾, $88 1⅞, $90

St. Louis Metal Market.

(*Corrected Weekly by Messrs. R. Sellew & Co.*)

Tin Plate.

IC, 10x14, Best Char..$ 9·50	IX, 14x20, Roofing....$11·50
IX, 10x14, " .. 13·00	IC, 20x28, " .... 19·00
IC, 12x12, " .. 10·00	IX, 20x28, " .... 23·50
IX, 12x12, " .. 12·50	IC, 10x14, Coke...8·50 @ 9·00
IC, 14x20, " .. 10·00	IC, 14x20, " .... 9·00
IX, 14x20, " .. 13·00	IC, 10x20, " .... 14·00
IC, 14x20, Roofing.... 9·00	

Usual difference for odd sizes.

Block Tin.
Large Pigs....25c | Bars....27c
Small " L. & F....26c |

Sheet Zinc.
Casks....₩ ℔ 10½c | Sheet....₩ ℔ 11c

Solder.
No. 1, Refined, in bars or plate....16c
No. 2, " " " 15c
Pig Lead....7½c

Sheet Copper.—14 to 100 lbs. Sheets 30x60....31c
10 to 12 lbs., " " and 20x72....32c
6 to 9 lbs., " " 35c
Tinned, 14 and 16 oz. 14x48....32c
Planished, 14 and 16 oz. 14x48....39c
" No. 7, 8 and 9....41c
Copper Bottoms....34c

Sheet Iron—	Com'n.	Sm'th.	Char'l.	Jun'ia
No. 16 to 20....	4½c	4½c	6½c	7¾c
No. 22 to 24....	4½c	4¾c	6½c	7¾c
No. 26....	4½c	5 c	6½c	8 c
No. 27....	4¾c	5¼c	6¾c	8¼c

Galvanized Iron....dis 30 %
Iron Rivets....dis 25 %
Iron Wire....dis 35 %
Coppered Pail Bail Wire....dis 20 %
Copper Rivets and Burs....dis 20 %
Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12....per lb. 17c
Stained—No. 9, 10, 11, 12....per lb. 16c
Tare 2 lbs to Bdle. For less than 1 Bdle. add 1c. ₩ ₩.
Retinned Stamped Ware....dis 20 %

CHICAGO.

(*Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.*)

September 10, 1875.

Tin Plate.—

10x14, IC, Ch'l. Good.$	14x20, IX, Ch'l Best. $13 00
10x14, IC, " Best. 9 50	14x20, IXX, " " . 15 50
10x14 IX, " " . 12 00	14x20, IXXX, " " . 18 00
12x12, IC, " " . 10 00	DC, 100 Plate, " " . 9 80
12x12, IX, " " . 12 50	DX, " " . 12 00
14x20, IC, " " . 10 00	DXX, " " . 14 50
	DXXX, " " . 17 00

Roofing IC, Charcoal, Best.... 9 00
Roofing IX, Charcoal " 11 50
20x28, IC, Charcoal Roofing, Com.... 16 00
20x28, IC, " Good.... 18 50
20x28, IC, " Best.... 19 00
20x28, IX, " " 23 50
10x14, IC, Coke Plates....8 50 to 8 75
14x20, IC, " ....9 00 to 9 50
10x20, IC, " 14 00

Block Tin.—
Large Pigs....25c | Bars....27c
Small....26c |

Zinc.—Sheet, 500 to 1000 lb. Casks....10½c
Loose Sheets....11c
Slab Zinc or Spelter....7½c

Copper.—Bottoms....34c
Sheathing....32c
Planished....39c
" Boiler lengths....41c
Ingot.... —
Bolt....35c

Braziers' Sheets.—
30x60, 6 & 7 lbs....₩ ℔ 39c | 30x60, 10 & 12 lbs...₩ ℔ 35c
30x60, 8 & 9 lbs.... " 37c | 30x60, 15 to 100 lbs. " 32c

Solder.—F. S. & Co.'s make.
Best Fine....20c
No. 1....19c
Roofing....17c
Braziers' or Spelter Solder....35c
Antimony....15c
Babbit Metal—F. S. & Co.'s....16c
No. 2....14c

Sheet Iron.—

	Common.	Smooth. Com.	Smooth Charcoal.	Smooth Juniata
No. 24....	4½c	5½c	6¾c	8¾c
25 & 26....	4¾c	5¾c	7 c	9 c
27....	4¾c	6 c	7¼c	9¼c

Galvanized Iron....dis 30 %
No. 18 to 20....12c | No. 27....15c
21 to 24....13c | 28....16c
25 & 26....14c |

Russia Iron.— | No. 1 Stained....16c
Perfect....17c | In Sheets, 1c. higher.

American Russia.— | B....11c
A....14c | In sheets, 1c higher.

Lead.— | Lead Pipe, in full coils .8¾c
Pig....7½c | Lead Pipe, when cut, .9¼c
Bar....8¾c | Sheet Lead....9¼c

Wire—Bright....dis 35 %
Coppered....dis 30 %

TO ALL WHO USE STEAM-POWER!

We will put our Governor on any Engine, and guarantee it to prove itself superior to all others.

If, after a fair trial, it does not, we will take it off at our own expense.

Shive Governor Co

BETHLEHEM, PA.

ALSO,

SHIVE'S PATENT WATCHMAN'S CLOCK AND DETECTOR,

AND

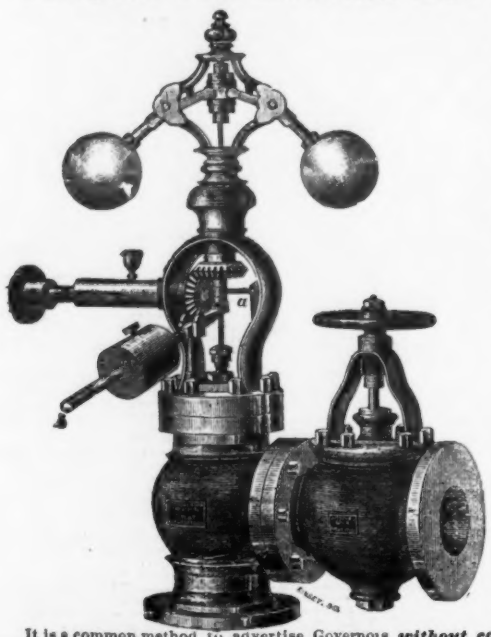
Buoy's Patent Counter Scale.

No Nest of Weights.

Circulars sent free

February 10, 1875. REDUCED PRICE LIST OF THE

JUDSON PATENT IMPROVED GOVERNORS.



☞ When Governors are ordered, be particular and say Governor with Stop Valve, or without Stop Valve; and either Black, Finished or Portable, as you may require, and with or without Lever Attachment.

For dimensions and other particulars send for Illustrated List.

Capacity of Valve or Diameter of Steam Pipe in Inches.	Price, Black.	Price, Bright Finish.	Price, Portable.	Price of Lever Attachment for altering speed.	Price of Stop Valve.
¾	18·00	20·00	17·00	..	..
¾	20·00	24·00	19·00	..	..
1	24·00	27·00	22·00	2·00	5·25
1¼	29·00	32·00	27·00	2·25	6·64
1½	34·00	38·00	31·00	2·50	8·50
2	41·00	46·00	38·00	2·75	11·50
2¼	47·00	54·00	..	3·25	16·00
2½	50·00	57·00	47·00	3·50	17·00
2¾	55·00	62·00		3·75	19·00
3	62·00	70·00		4·25	22·00
3½	71·00	80·00	No Larger Portable made than 2¾ in.	4·50	27·00
4	81·00	92·00		5·00	32·00
4½	91·00	108·00		5·50	37·00
5	102·00	114·00		6·00	42·00
5½	116·00	129·00		6·50	48·00
6	134·00	148·00		7·00	55·00
7	160·00	176·00		8·00	69·00
8	199·00	219·00		9·00	83·00
9	230·00	255·00		10·00	..

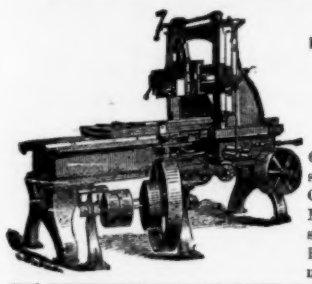
No Charge for Boxing & Cartage.

It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the above list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

JUNIUS JUDSON & SON, Rochester, N. Y.

The Pratt & Whitney Co.,

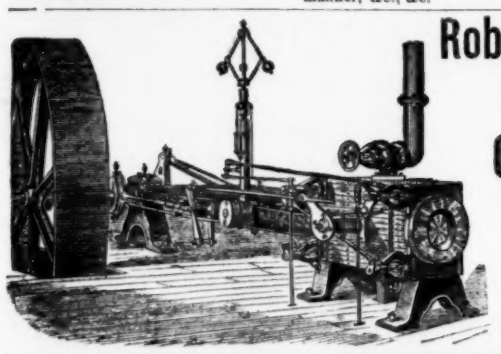
Hartford, Conn.,



Have constantly on hand and making

Drop Hammers

Of recently Improved Construction. Pony Trip Hammers, Blacksmiths' Sheaves, Broaching and Stamping Presses, Iron Shop Cranes, Machinists' Tools, Gun and Sewing Machine Machinery. Make to order Gray and Charcoal Iron Castings of all styles and sizes not exceeding 15 tons weight, (making patterns if desired). Furnish Clamp Pulleys of light patterns, cut gears in a superior manner, &c., &c.



Robt. Wetherill & Co

CHESTER, PA.

Corliss Engine BUILDERS

AND

Boiler Makers.

THORNE, DeHAVEN & CO.

21st Street, above Market,
PHILADELPHIA.

DRILLING MACHINES.

PORTABLE DRILLS. Driven by power in any direction, self-feed and convenient adjustment.

RADIAL DRILLS. Self-feed—large adjustable box table—separate base plate, every convenience.

VERTICAL DRILLS. Self-feeding—of new and improved designs.

MULTIPLE DRILLS. For boiler work, etc., 2 to 20 spindles, fed and returned by power or hand, together or separately.

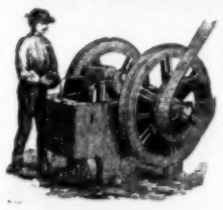
HORIZONTAL BORING AND DRILLING MACHINES. For large pieces—with boring head, adjustable, vertically and horizontally.

SPECIAL DRILLS. For special work. Gun Blank Drills, Coal Drills, &c., built to order.

BLAKE'S PATENT

STONE & ORE BREAKER.

New Pattern with Important Improvements & Abundant Strength



For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS It is extensively in use in MINING operations, for crushing

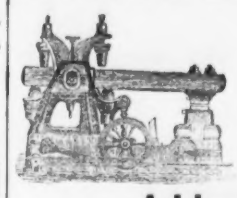
IRON, COPPER, ZINC, SILVER, GOLD, and other ORES.

Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar, Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, &c.**

For Illustrated Circulars, and particulars, address,

BLAKE CRUSHER CO., New Haven, Conn.

BRADLEY'S CUSHIONED HAMMER



Has Larger Capacity,

Is More Durable, takes up Less Room, does More and Better Work with less expense for Power and Repairs than any other Hammer in use.

GUARANTEED as RECOMMENDED.

Address, BRADLEY MANUFACTURING CO., Syracuse, N. Y.

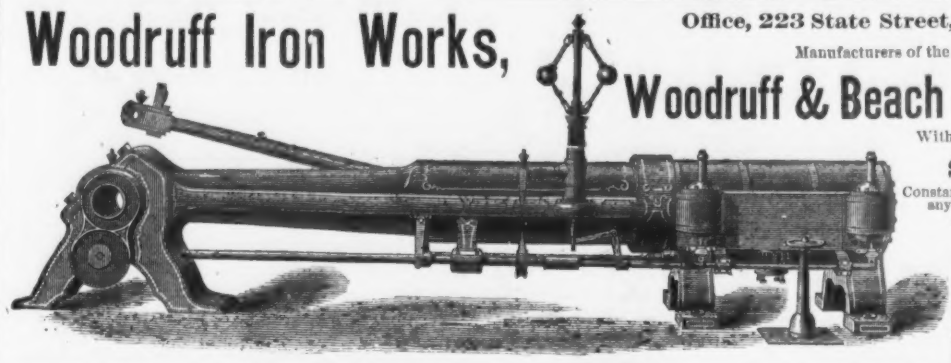
Woodruff Iron Works,

Office, 223 State Street, Hartford, Conn.

Manufacturers of the Celebrated

Woodruff & Beach Steam Engine,

With recent valuable improvements.



Steam Boilers

Constantly on hand and made to order any size or style. Special attention given to the manufacture of

MILL WORK

And all kinds of Machinery.

CASTINGS

Of any size or style. Direct all letters to **The Woodruff Iron Works, Hartford, Conn.**, as the Woodruff & Beach Iron Works and firm of Woodruff & Beach are both dissolved.

Knowles Patent Steam Pumps

MANUFACTURED BY THE

KNOWLES STEAM PUMP WORKS,

WARREN, MASS.

WAREHOUSES:

14 & 16 Federal Street, Boston, 92 & 94 Liberty Street, N. Y.

Cut above represents regular Boiler Feed Pump, No. 3 and 4. Showing New Patent Valve Motion, and Hand Power LEVER Attached and Detached.

FIRE PUMPS, a specialty.

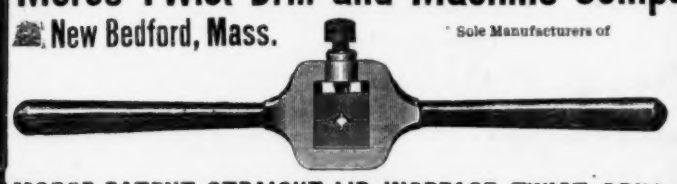
Mining Pumps (both Double Acting Plunger, and Piston Pattern,) which we guarantee to run absolutely noiseless on any lift from 100 to 600 ft., at a single lift, a specialty. Pumps for every possible duty. Prices as low as any, and our workmanship and material altogether the Best.

Every machine furnished under a complete guarantee.

Morse Twist Drill and Machine Company,

New Bedford, Mass.

Sole Manufacturers of



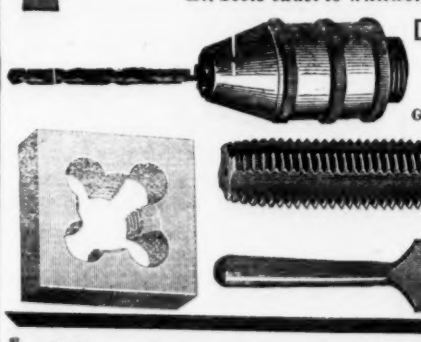
MORSE PATENT STRAIGHT-LIP INCREASE TWIST DRILL.

Beach's Patent Self-Centering Chuck.

Also Manufacture **Patent Taps and Dies, Patent Screw Plates, Patent Tap Wrenches, Pipe Taps and Pipe Reamers, Gas Dies.**

SOLID AND SHELL REAMERS.

All Tools exact to Whitworth's Standard Gauge.



Drills made to fit any Socket desired.

EDWARD S. TABER, Treas.
GEO. R. STETSON, Supt.

Machinery without Lubricant

METALINE.

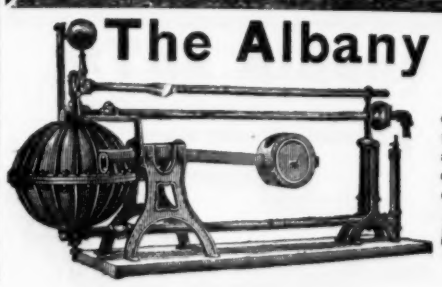
Machinery Metalined, or Metaline furnished to Machine Builders.

No oil or attention required. Runs with little or no wear. No dirt or danger from fire. No damage to goods in process of manufacture. Years in use by best concerns, who are refitting old, and ordering new machinery to be metalined.

AMERICAN METALINE COMPANY,

61 Warren Street, New York City.

The Albany Steam Trap.



This Trap automatically drains the water of condensation from *Heating Coils*, and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

Albany Steam Trap Company,

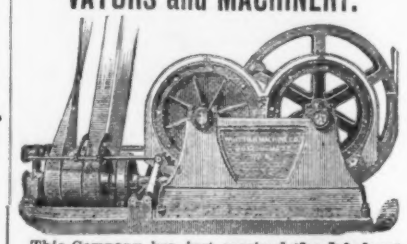
Albany, N. Y.

Whittier Machine Co.,

1176 Tremont St., Boston, Mass.

Manufacturers of

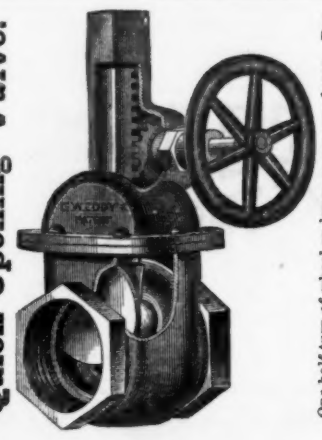
STEAM ENGINES, BOILERS, ELEVATORS and MACHINERY.



This Company has just received **the highest award, a Gold Medal, for Safety Elevators,** from the Massachusetts Charitable Mechanics Association.

CHARLES WHITTIER, Prest. JAMES STURGIS Treas.

Quick Opening Valve.



One-half turn of wheel or lever opens or closes. Particularly adapted for Throttle Valves, Soap Vats, Paper Mill Tubs, &c.

The EDDY VALVE

Made by the

MOHAWK & HUDSON MFG. CO.,

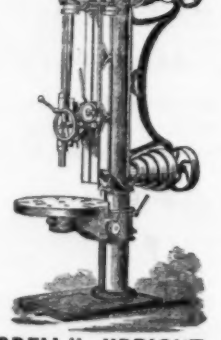
Waterford, N. Y.

Four miles from Troy, N. Y., by steam or horse cars.

P. BLAISDELL & CO.,

WORCESTER, MASS,

Manufacturers of the



'BLAISDELL" UPRIGHT DRILLS

And other First-Class Machinists' Tools.

Patented Steam and Hydraulic, April 1, 186

EAGLE PACKING,

Of various sizes for **ENGINES and PUMPS** manufactured by JAMES GLANDING & CO., No. **115** Queen St., Philadelphia. What the proprietors claim for the Eagle Packing: 1. Its general adaptation to all purposes for which packing is used. 2. Its durability. It will outlast any other article in use. 3. Its cheapness. It can be furnished to the consumer at a lower rate than any other packing

Machinery, &c.

THE

Shapley Engine

Patented Feb. 10, 1874.

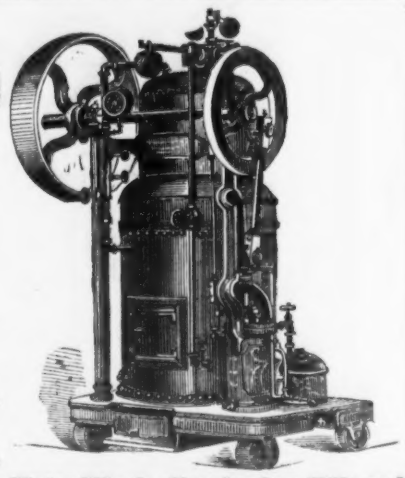
COMPACT,
PRACTICAL,
DURABLE,
ECONOMICAL.

$200·00.

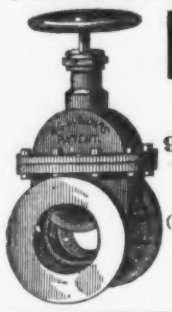
Cheaper than any Engine offered of the same capacity.

MANUFACTURED BY

SHAPLEY & WELLS,
Binghamton Iron Works,
Binghamton, N. Y.



Manufacturers of **Steam Engines, Boilers, Water Wheels, Circular Saw Mills and Mill Work generally.**



Ludlow Valve Mfg. Co.,

OFFICE AND WORKS:

938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,

VALVES

(Double and Single Gate, ¼ in. to 48 in.—outside and inside Screws, Indicator, &c.) for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

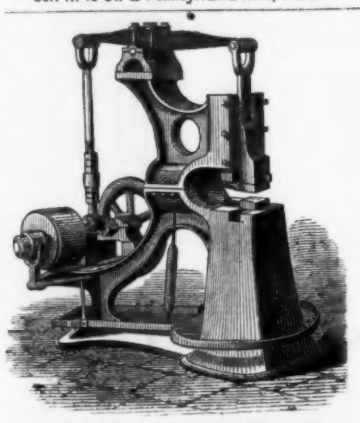
E. HARRINGTON & SON,
Manufacturers of

ENGINE LATHES,

From twelve (12) to forty-eight (48) inches swing;

Hand Lathes; Wood Turning Lathes; Vertica Drills; Boring Mills; Tapping and Centering Machines; Screw Press for Mandrels Grindstone Boxes.

Cor. N. 15 St. & Pennsylvania Ave., Phila.



THE PALMER POWER SPRING HAMMER.

Of these Machines we are building sizes to meet the requirements of all Manufacturers and Workers of Iron and Steel. In simplicity, durability, ease of operation, accuracy, and range of work, we guarantee them superior to any Machines of their kind produced in the world. For prices, references, and full descriptive circulars, address

S. C. FORSAITH & CO.,

Manchester. N. H.

WILSON MANUFACTURING COMPANY.,

NEW LONDON, CONN.

MANUFACTURERS OF

SOLID BOX VISES.

With or without Convex and Concave Washers.

Jackscrews, Braces, Coffee Mills, Turning Lathes; Clamp Heads and Screws; Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Relaying Pins, Marlin Spikes, Malleable Iron Castings, and Genera Hardware.

GALVANIZING DONE TC ORDER.

WILSON MFG. COMPANY,
Warehouse 97 Chambers and 81 Reade Streets. N. Y.

The Frazer Axle Grease and Lubricator.

A pure Lubricator, free from water, gum or sediment. The best article made for *Wagons, Open Journals, Cog Wheels Rollers* and wherever a *Solid Lubricator* or *Grease* can be applied. Put up in Boxes, Kegs and Barrels. For prices see New York Price List in this paper. Established 10 years.

Frazer Lubricator Company,
104 Maiden Lane, New York.

IMPROVED

Engine Lathes

SCREW MACHINES, &c.
JONES, LAMSON & CO.,
Windsor, Vt.

The Whitmore Engine.

SAFEST, CHEAPEST & BEST.

Lovegrove & Co.,
No. 121 South Fourth Street,
PHILADELPHIA, PA.
Sole Manufacturers
Engines, Boilers and Steam Pumps.

The Hartford Foundry & Machine Co

Successors to the
Woodruff & Beach Iron Works,
HARTFORD, CONN.
J. S. Hunter, Prest. **E. J. Murphy,** Treas. & Sec.
High and Low Pressure Marine & Stationary

STEAM ENGINES AND BOILERS,

Mining, Powder & Paper Mill Machinery,
And every variety of Iron and Composition Castings made to order.

The following are a portion of the Engines manufactured at these works, and are a sufficient guarantee of our capacity for doing first-class work, viz.: The Pumping Engines in the cities of Brooklyn, N. Y.; St. Louis Mo. and Hartford, Conn., and in the Charlestown, Mass. and Norfolk, Va. Navy Yards, and the engines in the U. S. Steam Sloops of War Michigan, Kearsage, Manitou, Minnetonka and Piscataqua and the Gun Boats Cayuga, Pequot and Nepsic, the Government Transports Dudley Buck and Geo. C. Collins, and the Steamships America and United States. Also the large Horizontal Engine for the new Plate Mill of the Bay State Iron Co.

BOOMER & BOSCHERT PRESS CO.

Syracuse, N. Y., & 26 Beekman St., N. Y. City.

For Cider, Wine, Hay, Lard, Tallow, Paper, Cotton, Seed Oils, *and other purposes where great pressure is required.*

Send for Circulars.

Machinery, &c.

Established 1848.

WM. SELLERS & CO.,

1600 Hamilton Street, PHILADELPHIA.,

Engineers, Iron Founders and Machinists.

RAILWAY SHOP EQUIPMENTS.

Our Steam Hammers, Lathes, Planers, Drills and Bolt Cutters

Are of Improved and Patented Construction.

Railway Turning and Transfer Tables,
SHAFTING & MILL GEARING, a specialty.

Pivot Bridges.

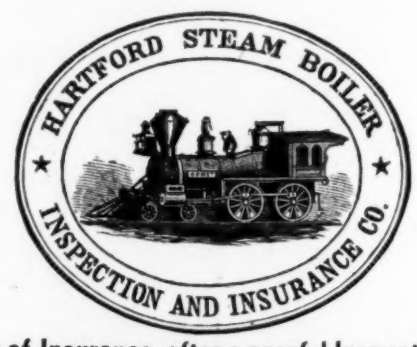
☞GIFFARD'S INJECTOR--IMPROVED, SELF-ADJUSTING.☜

FAIRMOUNT MACHINE WORKS,
Office, **2106** WOOD St., Philadelphia.
Manufactures as Specialties

POWER LOOMS,
SPOOLING, BEAMING, DYEING and Sizing Machines.
PATENT BOBBIN WINDING MACHINES
wind direct from
hank or skein to shuttle bobbin.

SHAFTING

With Patent Adjustable self-oiling Bearings.
Adjustable Self-Oiling Hangers,
8, 10, 12, 15 and 18 in. drop,
Ball and Socket Self-Oiling Pillow Blocks.
Pulleys, from 4 inch to 10 feet in diameter.
Pulleys made in two parts, any size required.
SELF-ACTING WOOL-SCOURING MACHINES,
LARD AND PARAFFINE OIL PRESSES.
Improved Power Hoisting Machines.
Machine and Foundry Work in all their branches
Plans taken, and Factories fitted out complete with shafting and Gearing
Send for list of Pulleys, &c.
THOMAS WOOD.



Issues Policies of Insurance after a careful Inspection of the Boilers

COVERING ALL LOSS OR DAMAGE TO

Boilers, Buildings and Machinery,

ARISING FROM

STEAM BOILER EXPLOSIONS.

The Business of the Company includes all kinds of STEAM BOILERS

Full information concerning the plan of the Company's operations can be obtained at the

COMPANY'S OFFICE, HARTFORD, CONN.,

or at any Agency.

J. M. ALLEN Pres. W. B. FRANKLIN, Vice-Pres. J. B. PIERCE, Sec'y.

Board of Directors:

J. M. ALLEN, President.
LUCIUS J. HENDEE, Pres't Ætna Fire Ins. Co.
FRANK W. CHENEY, Ass't Treas. Cheney Brothers Silk Manufacturing Co.
CHARLES M. BEACH, of Beach & Co.
DANIEL PHILLIPS, of Adams Express Co.
GEO. M. BARTHOLOMEW Pres't Amer. Nat'l Bank.
RICHARD W. H. JARVIS Pres't Colt's Fire Arms Manufacturing Co.
THOMAS O. ENDERS, Sec Ætna Life Ins. Co.
LEVERETT BRAINARD, o Case Lockwood & Brainard
GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fi Arms Mfg. Co
AUSTIN DUNHAM, Pres't Willimantic Linen Co.
GEO. CROMPTON, Crompton Loom Works, Worcester
EARL P. MASON, Pres't Prov. & Wor. R. R., Prov.
WILLIAM ADAMSON, of Baeder, Adamson & Co., Philadelphia.
WM. B. BEMENT, of Wm. B. Bement & Co., Phila.
S. P. M. TASKER, of Morris, Tasker & Co., Philadelphia.
C. W. FREELAND, Treas. Dwight Manufacturing Co., Boston.

THEO. H. BABCOCK, Manager,
New York Branch, No. 1 Park Place.

THE AMERICAN DREDGING CO.

PATENT IMPROVED "GRAPPLE-DREDGE."

GRAM'S PATENT GUN POWDER PILE-DRIVER.

IMPROVED "DIPPER-DREDGE."

BUILDERS OF STEAM DREDGING MACHINES,

GUNPOWDER PILE-DRIVERS, &c.

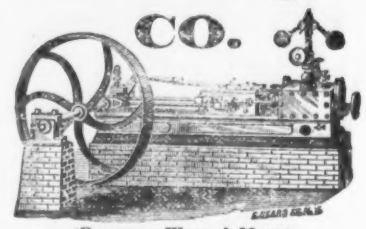
CONTRACTORS FOR

IMPROVING RIVERS AND HARBORS,
EXCAVATING CANALS,
RECLAIMING AND FILLING LOW LANDS,
PILING FOR FOUNDATIONS, PIERS, Etc.

Offices, No. 10 South Delaware Ave., Philad'a.

Machinery, &c.

UTICA Steam Engine CO.



(FORMERLY WOOD & MANN.)

STATIONARY & PORTABLE

STEAM ENGINES,

The best and Most Complete Assortment in the Market.

The se Engines have always maintained the very highest standard of excellence. We make the manufacture of Engines, Boilers and Saw Mills a specialty. We have the largest and most complete works in the country with machinery specially adapted to the work.

We keep constantly in process large numbers of Engines, which we furnish at the very lowest prices and on the shortest notice. We build Engines specially adapted to Mines, Saw Mills, Grist Mills, Tanneries, Cotton Gins, Threshers and all classes of manufacturing.

We are now building the celebrated Lane Circular Saw Mill, the best and most complete saw mill ever invented.

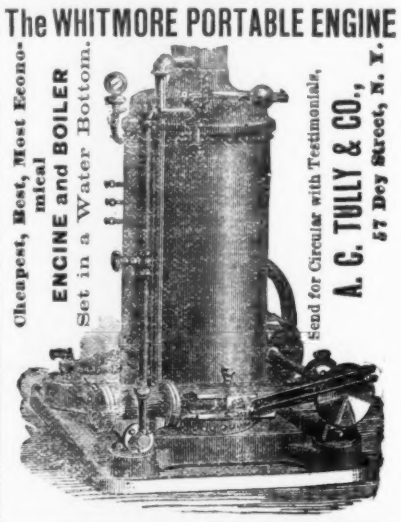
We make the manufacture of Saw Mill Outfits a special feature of our business, and can furnish complete on the shortest notice.

Our aim in all cases is to furnish the best machinery in the market, and work absolutely unequalled for design, economy and strength.

Send for Circular and Price List.

UTICA STEAM ENGINE CO.,
UTICA, N. Y.

The WHITMORE PORTABLE ENGINE



LATHES, PLANERS,

and other

Machinists' Tools.

For Sale by

New Haven Mfg. Co.,

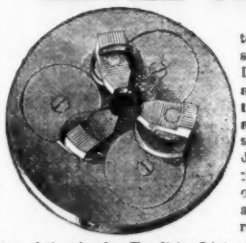
NEW HAVEN, CONN.

MINERS' CANDLES.

Superior to any other Light for Mining Purposes. Manufactured by

JAMES BOYD'S SONS,
Nos. 10 & 12 Franklin St., N. Y.

JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.



We invite attention to the superior construction of this chuck. Its working parts are **absolutely protected from dirt and chips.** It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address,

Lambertville Iron Works, Lambertville, *N. J.*

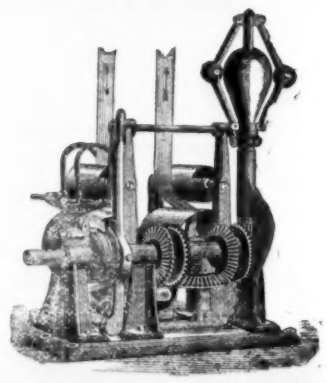
DIFFERENTIAL GOVERNOR.

The HARTFORD GOVERNOR CO.,

Sole makers of the

Weaver Differential Governor

FOR WATER.



Powerful, positive, radically new. Introduced and working with complete success. Write us for circulars, etc., at

HARTFORD, CONN.

TUBAL SMELTING WORKS,

760 South Broad Street, PHILADELPHIA.

PAUL S. REEVES,

MANUFACTURER OF

ANTI-FRICTION METALS.

XXX Genuine	40c	C	20c
XX	38c	D	15c
X	35c	E	13c
A	30c	F	11c
B	25c		

"Note."—The above are my standard mixtures, and have given satisfaction wherever used, but I am prepared to make Anti-Friction Metal of any quality or mixture desired by the purchaser.

BRASS CASTINGS, 21 to 35c. | INGOT BRASS, 19 to 28c. | BRASS TURNINGS AND OLD METALS WANTED.

Plumb. Burdict & Barnard,

BUFFALO, N. Y.

MANUFACTURERS OF

BOLTS

COACH SCREWS.

SKEIN BOLTS,

CARRIAGE BOLTS,

TIRE, SLEIGH SHOE,

Machine and Blank Bolts.

FERNALD & SISE, N. Y. Agents, 100 Chambers St.

ESTABLISHED 1842.

WM. & HARVEY ROWLAND,

PHILADELPHIA,

P. O. Address: Frankford, Philad'a. | MANUFACTURERS OF ALL KINDS OF

Elliptic, Platform AND C Springs,

MADE EXCLUSIVELY FROM

SWEDISH STOCK, OIL-TEMPERED and WARRANTED.

Swedish Tire, Toe, Blister and Spring Steel.

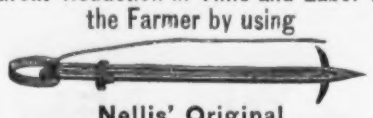
CAST SPRING AND PLOW STEEL.
CAST SHOVEL, HOE AND MACHINERY STEEL.

BESSEMER TOE, SLEIGH AND TIRE STEEL.
BESSEMER SHOVEL AND PLOW STEEL.
BESSEMER MACHINERY AND CULTIVATOR STEEL.

RE-ROLLED NORWAY SHAPES.
NORWAY NAIL RODS ROLLED AND SLIT FROM SUPERIOR BRANDS.

NEW TIME TABLE.

Great Reduction in Time and Labor to the Farmer by using



Nellis' Original

HARPOON HORSE HAY FORK,

Nellis' Grapple.

Grapple and Pulleys; also, Nellis' Patent Stacker and Method of conveying Hay, Straw, &c. A ton of Hay can be delivered in three to five minutes to any part of Mow or Stack. The right of Stacker and Conveyer granted FREE to the Farmer purchasing our Horse Hay Fork and Fixtures during season of 1875. With it Pulleys can be attached or detached to rafter or beam, without the use of a ladder.

NELLIS' PULLEY,

Improved Wrought Frame, Prepared Wood Wheel. Warranted superior to any Horse Fork Pulley offered in the market.

A trial of these goods will convince any farmer that he cannot afford to dispense with them, as their entire cost is often times saved by a single day's use.

Also manufacturers of all descriptions

Of Agricultural Steel & Iron,

Steel Tempered by Nellis' process to suit every kind of soil.

Prices and descriptive Catalogues of our goods furnished free. Address,

A. J. NELLIS & CO.,
Pittsburgh, Pa.

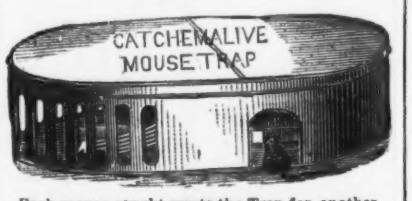
SEMPLE, BIRGE & CO., St. Louis, Mo.,
General Agents for the Southwest.

ESTABLISHED 1840.

R. E. DIETZ,

No. 54 & 56 Fulton, and
29 & 31 Cliff Street, New York,

Manufacturer of the



Each mouse caught resets the Trap for another.

TUBULAR

And Other

Patent Lanterns

BRASS AND IRON

Jack Chains.

STANLEY G. FLAGG & CO.

PHILADELPHIA, PA.

Office and Warehouse,
No. 216 & 218 N. THIRD ST.

Manufacturers of

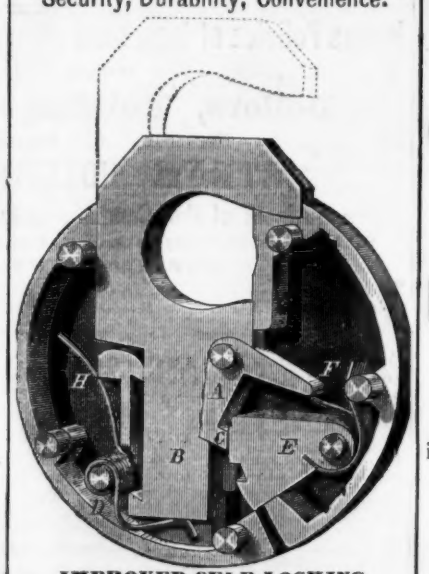
STEEL CASTINGS.

A Substitute for Steel and Wrought Forgings.
☞ Circulars sent on application.

D. K. MILLER LOCK CO.,

712 Cherry St., Philadelphia, Pa.

Security, Durability, Convenience.



IMPROVED SELF-LOCKING

Brass Pad Locks.

Made in the most substantial and compact manner, and are in every respect a superior article. We guarantee that no two locks are alike, unless specially ordered. Each lock furnished with two keys. Any number of locks or keys made to order. Adopted by the United States Government. Samples of No. 1 Lock sent to all parts free, on receipt of $1·75. Liberal Discounts to the Trade.

GAS FIXTURES.

Lamps, Bronzes,

Equal to any made, in great variety, all of our own manufacture.

BRADLEY & HUBBARD MF'G. CO.,

SALESROOMS:
21 & 23 Barclay, cor. Church St.,
NEW YORK.

SCRANTON

Brass Works,

J. M. EVERHART,

Manufacturer of Brass Work for Water, Gas and Steam. Brass Castings and Jobbing promptly attended

SCRANTON, PA.

Established 1827.

DIXON'S

Carburet of Iron

STOVE POLISH.

47 Years in Market.

For stove dealers we put up the genuine **DIXON'S STOVE POLISH** in 25 and 50 lb. boxes for sale by the pound.

All information furnished freely on application by letter to

THE JOS. DIXON CRUCIBLE CO.,

ORESTES CLEVELAND, President. JERSEY CITY, N. J.

Russell, Burdsall & Ward,

PORT CHESTER, N. Y.

Manufacturers of

Carriage, Tire, Plow, Stove

AND OTHER

BOLTS.

Carriage Bolts made from Best Square Iron,-a Specialty.

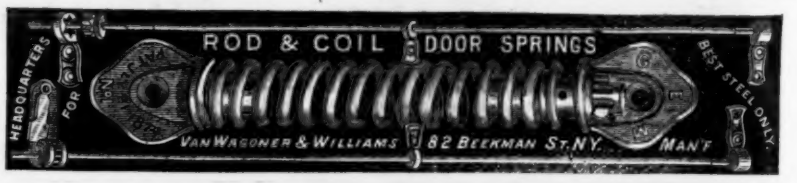
Headquarters for Door Springs.

Great Reduction IN PRICES.

The "Gem" Coil Springs

(Warranted BEST CAST STEEL.)

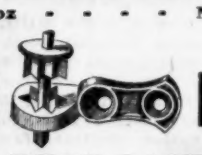
No. 1, Per Doz.,	$3·50	- - - - - -	Discount 10 per cent.
No. 2, "	2·50	- - - - - -	Discount 10 per cent.
No. 3, "	2·00	- - - - - -	Discount 10 per cent.



Old Style  Rod Springs,

(TORREY PATTERN, WARRANTED BEST CAST STEEL.)

$2·50 Per Doz - - - - Net.

Gray's Improved  Rod Springs

(WARRANTED BEST CAST STEEL.)

$2·50 Per Doz - - - - Net.

All of our Springs are carefully made and tempered, and their quality is guaranteed.

VAN WAGONER & WILLIAMS,

Hardware Manufacturers,

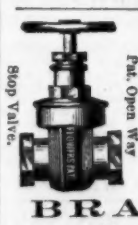
82 Beekman Street, NEW YORK.

DERBY SILVER CO., Derby, Conn.,

Manufacture the most reliable

SILVER PLATED SPOONS & FORKS.

They are plated by weight, and not by time or guess, containing 20 per cent. more silver than the usual standard, on a base of Nickel Silver, and finished by hand. Each article is guaranteed by the trade mark and warranted to give full satisfaction. We ask of the trade a fair and impartial test, assuring them that the high standard already attained, shall be maintained. Send for Catalogue and Price.



Schofield's Pat. Gauge Cock.

HENRY C. MEYER & CO.,

Manufacturers of

BRASS WORK

For Water, Gas and Steam.

Importers and Dealers in PLUMBERS' MATERIALS,
46 & 48 Cliff Street, N. Y.

Specialties manufactured and controlled by us: Fuller's Patent Faucets and Mineral Water Cocks; Murdock Hydrants and Street Washers; Flower's Open Way Valves; Schofield's Gauge Cocks; Hall's Lock Gas Cocks. Illustrated Catalogues expressed to the trade on application, where this advertisement is referred to.

The Most Durable for Hot or Cold Water ever made.